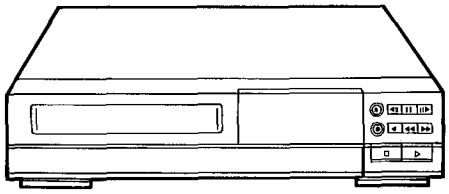
HITACHI

SERVICE MANUAL



V18190

TK | No.8701E

VT-L1500E

AF MECHANISM

This model uses a AF MECHANISM.
Refer to the following manual for the AF MECHANISM.

Manuals releted to the VT-L1500E

Name of manual	Manual No.
AF Mechanism	4412E
VT-L1100E	8609E

VHS

This video desk is a VHS type video recorder. For proper operation, only the VHS type cassette must be used.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

March 1997 Image & Information Media Systems Division, Tokai

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for a higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual. Electrical components having such features are identified by marking with a ⚠ on the schematics and the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards. Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies for, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

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The AF mechanism is used as the mechanical block of this VCR. Refer to the following manual when dismantling the mechanical section
◆ AFmechanism edition (No.4412E)
"CHAPTER 1 DISASSEMBLY"

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CHAPTER 3 MECHANICAL ADJUSTMENT

The AF mechanism is used as the mechanical block of this VCR. Refer to the following manual when dismantling the mechanical section
◆ AFmechanism edition (No.4412E)
"CHAPTER 2 MECHANISM ADJUSTMENT"
"CHAPTER 3 MAINTENANCE AND INSPECTION"
◆ VT-L1100E (No.8609E)
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CHAPTER 1 GENERAL INFORMATION

1. SPECIFICATIONS

Video Cassette:	VHS type
Recording:	Rotary two-head helical scan azimuth recording
Tape Speed:	7.8 mm/sec. (09mode)
Tape Width:	12.7 mm
Operation Temperature:	5℃ to 40℃
Video:	PAL colour (system I) & CCIR monochrome signals (625 lines)
Recording Lengths:	9,27hours
Video Input:	1 Vp-p 75 ohm unbalanced
Video Output:	1 Vp-p 75 ohm unbalanced
S/N Ratio (Video):	More than 40 dB (09 mode)
S/N Ratio (Audio):	More than 40 dB (09 mode)
Horizontal Resolution:	Colour: 240 lines (09 mode) Monochrome: 350 lines (09 mode)
Audio Input:	-8dBm 50 Kohm unbalanced
Audio Output:	-10dBm 600 ohm unbalanced
Audio Frequency Range:	100 Hz to 3 kHz (09 mode)
Power:	AC 230V, 50Hz
Power Consumption:	23W
Cabinet Size:	435 mm (W) × 94 mm (H) × 366 mm(D)
Weight:	Approx. 6.2 kg

* Design and specifications are subject to change without notice.

2. COMPARISON OF FEATURES

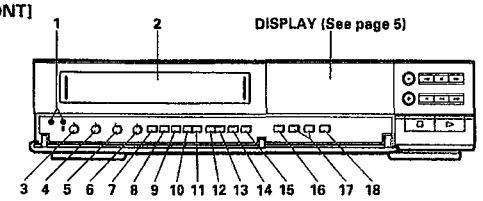
← : Same as left

	ITEM		VT-L1500E	VT-L1100E
FEATURE	Format		VHS	←
	OSD		Yes	←
	Video Rec Mode		09 / 27	03 / 12 / 24
	Video Play Mode		09 / 27 / L27	02 / A12 / A24 / 24
	Audio Rec Mode		09 / 27	03 / 12 / 24
	Audio Play Mode		09 / 27	03 / A12 / A24
	Reverse Play		Yes (1Min)	←
	F.Advance		Yes	←
	Reverse F.Advance		Yes	←
	Fine Still		Yes	←
	Rec Check		Yes	←
	Timer Rec Programm		7 Pro/Week, 2Pro/Day	←
	Alarm Rec Mode		09 / 27	03 / 12 / 24
	Alarm Rec Term		5Sec / 15Sec / 30Sec / 1Min / 3Min / Manual	←
	One Shot Rec		No	←
	Memory Back Up Tim		720 Hr	←
	Tape Speed Display		Yes	←
	Mode Lock		Yes	←
	Version Display		No	←
	Buzzer		No	←
	Trouble Mode		Yes	←
INPUT/OUTPUT TERMINAL	Video Input/Output		BNC 1 System	←
	Audio Input/Output		US 1 System	←
	Interface(RS-232C) Connector		No	←
	15 Pin Plug	1	Alarm In	←
		2	Alarm Out	←
		3	Alarm Rec Reset	←
		4	Tape End Out	←
		5	Tape End Reset	←
		6	NC	←
		7	NC	←
		8	NC	←
		9	Camera Sw Out	←
		10	Rec Start In	←
		11	Gnd	←
		12	NC	←
		13	Remote In	←
		14	NC	←
		15	Gnd	←
CHASSIS	Basic		AF Chassis	←
	Video Heads		DA 4 Head EP : 24 / 24 μ m	DA 4 Head SP : 57 / 57 μ m
	Auto Heads Cleaning		Yes	←
	Rewind Time		E-180 : 2.5 Min	←

3. OPERATION

CONTROLS AND FUNCTIONS

[FRONT]



1 RESET BUTTONS
Press these buttons at the same time to clear all (microprocessor) functions.
Press the "S" button to reset the system (This does not erase the stored information.)

2 CASSETTE COMPARTMENT

3 SHARPNESS CONTROL
Adjust the picture quality to hard or soft during playback

4 TRACKING CONTROL
Adjust to optimize the picture quality during playback at the 09 and 27 hour speeds

5 SLOW TRACKING CONTROL
Adjust to optimize the picture quality in the SLOW PLAY mode, e.g. L27 hours speed

6 V LOCK CONTROL
Reduces vertical jitter in the still play mode

7 PROGRAM BUTTON
Press to select one of the six programmable functions

8 START/STOP BUTTON
Press to start or stop the programming of a programmable function (Press once to start the programming sequence and a second time to stop (end) it.)

9 SET BUTTON
Press to select the specific value which is to be changed with the UP/DOWN buttons

10 DOWN BUTTON
Press to decrement, change or reverse to the previous/lower value

11 UP BUTTON
Press to increase, change or advance to the next higher value

12 V-POS (VERTICAL POSITION) BUTTON
Press repeatedly to control the vertical position of the programmable display on the monitor

13 H-POS (HORIZONTAL POSITION) BUTTON
Press repeatedly to control the horizontal position of the programmable display on the monitor.

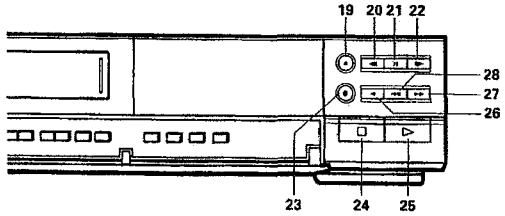
14 ALARM INDEX BUTTON
Press this button to cause the INDEX indicator to light, and set the VCR to the visual search mode (press F.FWD or REWIND during playback mode) in this state; the start of the alarm recorded can be located

15. ALARM RESET BUTTON
Press to clear POWER LOSS information. When this button is pressed when the Alarm Memory screen is being displayed, the alarm memory is cleared

16 COUNTER RESET BUTTON
Press to clear the digital counter to "00000"

17 REC/PLAY HOURS BUTTONS
▲(UP): Press to increase hours to the next higher value
▼(DOWN): Press to decrease hours to the next lower value. The tape speed will be indicated as part of the monitor display

18 TIMER BUTTON
Press after programming the TIMER for automatic TIMER recording. See page 11 for TIMER programming



19 EJECT BUTTON
Press to remove the cassette. The EJECT button will not operate in the RECORD mode

20 FIELD REVERSE BUTTON
Press to reverse the tape by one field in the STILL playback mode

21 STILL BUTTON
Press to momentarily stop tape motion in the play mode. The STILL function allows close inspection of individual scenes. See the description of STILL play back on page 17

22 FIELD ADVANCE BUTTON
Press to advance the tape one field in the STILL play back mode

23 RECORD BUTTON
Press to start recording

24 STOP BUTTON
Press to stop the tape. The STOP button must be pressed to end the RECORD and PLAY mode

25. PLAY BUTTON
Press to play recorded material in the forward direction. Pressing this during recording makes it possible to check recordings

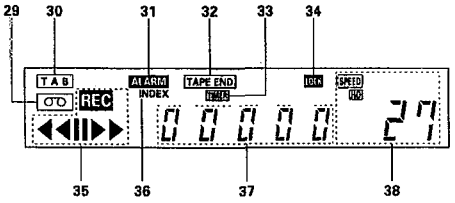
26 REVERSE PLAY BUTTON
Press to play recorded material at the 09 or L27 speed in the reverse direction during the PLAY mode

27 FAST FORWARD/VISUAL SEARCH BUTTON
Press to activate fast forward
Press this button during playback and a forward play back picture at high speed can be seen

28 REWIND/VISUAL SEARCH BUTTON
Press to start rewind.
Press this button during playback and a reverse playback picture at high speed can be seen

CONTROLS AND FUNCTIONS (Continued)

[DISPLAY]



29 TAPE-IN INDICATOR
Lights when a cassette is in the compartment

30 TAB INDICATOR
Lights when a cassette without its safety tab is loaded

31 ALARM INDICATOR
ALARM appears during alarm recording
ALARM flashes when alarm recording ends

32 TAPE END INDICATOR
Lights when the tape reaches the end during recording.
Note: "TAPE END" is not displayed when you have selected REW, RE REC in the "RECYCLE FUNCTIONS" menu in the alarm display or you have selected REWIND, STOP IF ALARM but an alarm recording has not been made

33 TIMER INDICATOR
This is lit during timer recording or TIMER stand-by mode
The indicator flashes in the following cases
- A cassette is not loaded
- A cassette without its safety tab is loaded
- The timer has not been programmed

34. LOCK INDICATOR
LOCK appears when the recorder is in the security lock mode.

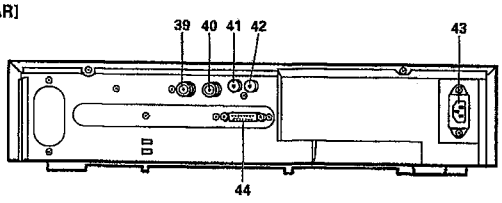
35. VCR MODE INDICATORS
- REC appears during recording
- ◀◀ appears during the rewind mode
- ▶▶ appears during the fast forward mode
- ◀◀ (or ▶▶) flashes during visual search
- ▶ appears during the playback mode
- ◀ appears during the reverse play mode
- ❚❚ appears when the STILL button is pressed during play mode and disappears when the STILL or PLAY button is pressed again.
- ◀❚❚ (or ❚❚▶) appears while the FIELD REV (or FIELD ADV) is held depressed in the still playback mode
  Note: Still playback is restored when the FIELD REV (or FIELD ADV) button is released

36 INDEX INDICATOR
INDEX appears when the ALARM INDEX button is pressed.
INDEX disappears when the ALARM INDEX button is pressed again
INDEX flashes during alarm indexing

37 DIGITAL COUNTER
Shows the tape counter. The counter does not count during non recorded sections of a tape

38 TAPE SPEED INDICATOR
Shows the tape speed

[REAR]



39 VIDEO IN
Receives video signal from a video camera or another VCR

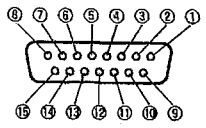
40 VIDEO OUT
For connection to monitor.

41. AUDIO IN
Accepts an audio signal from a camera, external sound equipment or another recorder (Line: –8 dBm, 50 Kohm, unbalanced).

42. AUDIO OUT
Provides an audio output for a monitor or another recorder (–10 dBm, 600 ohm, unbalanced)

43 AC INLET

44 EXTERNAL INTERFACE (15-PIN) JACK
Connect an alarm switch, door sensor, etc. using the 15-pin adapter provided



① ALARM IN
② ALARM OUT
③ ALARM REC RESET
④ TAPE END OUT
⑤ TAPE END RESET
⑥ —
⑦ —
⑧ —
⑨ CAMERA SW OUT
⑩ REC START IN
⑪ GND
⑫ —
⑬ —
⑭ —
⑮ GND

VIDEO CONNECTIONS

Use coaxial cables when connecting a camera and a monitor to this VCR

Note: Long cable runs to distant cameras may cause signal deterioration and/or sync discrepancies. If these problems occur, use video line amplifiers and/or cameras having phase adjustable line locked vertical sync

Video Input

In single camera systems, connect the camera to the Video IN BNC terminal on the VCR rear panel. Use of a 2:1 interlace camera is highly recommended; otherwise, the monitor will show vertical distortion of the TIME/DATE characters

In multiple camera systems, connect the switcher output to the Video IN BNC terminal Because multiple camera systems require synchronization, use of cameras having line-locked vertical sync or a genlocked master drive/sync source is highly recommended The use of vertical interval switchers is also recommended

Video Output

Connect the monitor to the Video OUT BNC terminal on the rear panel.

AUDIO CONNECTIONS

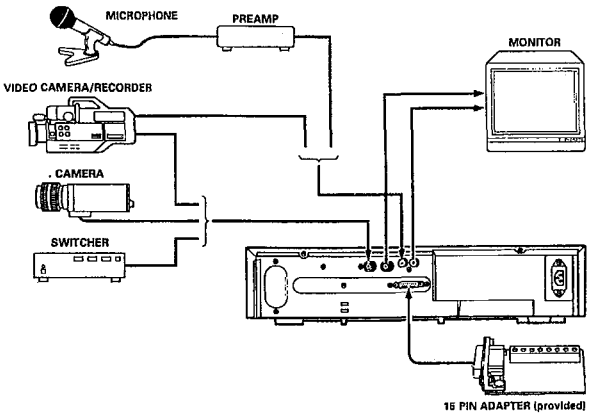
Note: Audio recording can be performed at the 09 and 27-hour recording speeds and audio playback at the 09 and 27 speeds

Audio In: Accepts an audio signal from a camera, external sound equipment, or another recorder (Line: –8 dBm, 50 kohm)

Audio Out: Provides an audio output for a monitor or another recorder (–10 dBm, 600 ohm, unbalanced)

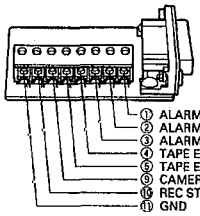
USING THE 15-PIN ADAPTER

Attach the wires of the alarm switch, door sensor or warning lamp to the 15 pin adapter using screws.
After connection, connect the adapter to the EXTERNAL INTERFACE jack on the rear of the VCR
See page 8 for details



* It is necessary to connect to suit your purpose

Pin Arrangement of 15-Pin Adapter



ALARM IN

You can connect an alarm switch with a resistance of 1 kohm or less or a door sensor Connect pin ① to pin ⑪ (ground) through the switches

Note: Do not apply a voltage to pin ① or ⑪

ALARM OUT

Approx 12V is applied to pin ② during an alarm recording

Notes:

- When you have selected "PULSE" in the "ALARM OUT" menu in the ALARM display, approx 12V pulses will be applied to the output after the alarm recording ends
- When you have selected "DURATION" in the "ALARM OUT" menu in the ALARM display, no voltage is applied after the alarm recording ends
- The output impedance is approx 100 ohm

TAPE END OUT

Approx 12V is applied to pin ④ when the tape reaches the end

Notes:

- This does not operate when you have selected "REW, RE-REC" in the "RECYCLE FUNCTIONS" menu in the ALARM display or you have selected "REWIND, STOP IF ALARM" and no alarm recording has been made
- The output impedance is approx 100 ohm

TAPE END RESET

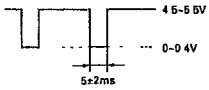
The TAPE END OUT function can be turned off when pin ⑤ is shorted to pin ⑪

Note: Do not apply a voltage to pin ⑤ or ⑪

CAMERA SW OUT

Pin ⑨ outputs the following signal each time a one-field image is recorded You can combine this with a video camera switcher which can be controlled externally

The output timing can be specified using the SELECTION MENU screen



REC START IN

Recording is started when 5-12V is applied to pin ⑩

ALARM REC RESET

When pin ③ is shorted to pin ⑪ during alarm recording, alarm recording is stopped and the original mode be restored

CASSETTE TAPES

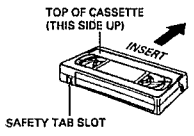
TAPE LIFE

Slower speed operation in time lapse recording applies stress to video tape Tapes should be inspected and, if necessary, discarded after the total number of complete tape passes (recording and playback) exceeds the following limits:

Tape Speed	Complete Tape Passes
09, 27	50

INSERTING A CASSETTE

Note: This is the first step in all VCR operations The VCR will not operate without a cassette in place To insert a cassette push the cassette through the cassette compartment door until the VCR mechanism pulls it into the compartment.
The tape in indicator turns on



Tape Insertion Position

REMOVING A CASSETTE

Before removing a cassette, rewind the tape completely.
To remove a cassette, press the EJECT button The cassette will come partially out of the compartment so you can pull it out

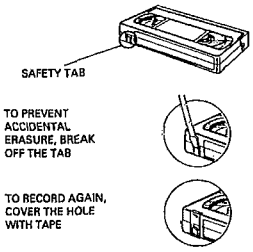
VIDEO CASSETTE SAFETY TAB

To prevent accidental erasure of recorded material, remove the safety tab from the lower left corner of the cassette

Recording is impossible when the safety tab is removed

Notes:

- The TAB indicator lights when a cassette without its safety tab is loaded
- To record again on a cassette that has its safety tab removed, cover the tab hole with tape. In the TIMER mode, the TIMER indicator will flash on and off if the cassette is inserted without its safety tab slot covered or intact



Video Cassette Safety Tab

TAPE LENGTH

The total recording time at each of the eleven tape speeds depends on the length of the tape used
The table below shows:

1. The total recording time that can be recorded at each tape speed mode on E90 and E180 tapes
2. The pictures per second at each speed
3. The speeds at which audio can also be recorded

Use the table to select the tape length which gives the best compromise between tape cost, total recording time, and elapsed time between pictures

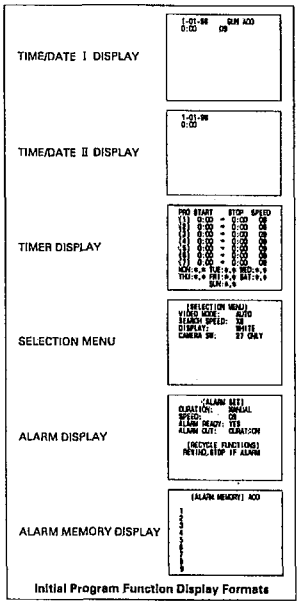
Tape Speed Mode		09	27	L27
Total Recording Hours	E90	4.5	13.5	—
	E180	9	27	—
Pictures/ Second	RECORD	50	16.7	—
	PLAYBACK	50	16.7	5.6
Audio	RECORD	Yes	Yes	—
	PLAYBACK	Yes	Yes	No

Note: The values in this table are approximate

SETUP

On-Screen displays are provided to aid setup of the programmable functions The six functions on the Program Menu appear individually on the monitor in this order.

1 TIME/DATE I
2 TIME/DATE II
3 TIMER
4 SELECTION MENU
5 ALARM
6 ALARM MEMORY



Initial Program Function Display Formats

Note: If the VCR is not turned on for about 720 hours after the built-in battery is fully charged (after the VCR is turned on for more than 48 hours), the TIME/DATE I and II displays will be cleared

ESTABLISHING THE PROGRAM MODE

The TIME/DATE display appears on the monitor screen when the power cord is first plugged in

SELECTING A FUNCTION TO BE PROGRAMMED

The program menu will always begin with the TIME/DATE I function, followed by the TIME/DATE II, TIMER, SELECTION MENU, ALARM, and then the ALARM MEMORY functions Although the program menu always follows this order, it is possible to skip any of the available functions during the selection process

To select the desired program function (and to move from one program function to the next), press the PROGRAM button repeatedly until the desired function display format appears on the monitor.
After the desired function has been selected, follow the corresponding procedure to set that function

SETTING THE PROGRAM FUNCTION(S)

The first step in each programming procedure is: "Press the START/STOP button". The system allows up to five minutes for any one function setting to be completed after the START/STOP button is pushed. If no change/setting is entered within the five minutes period, the unit will automatically exit the selected program function and return the TIME/DATE display to the monitor (If this happens, re-select the desired program function, and follow the programming procedure for that function)

The following procedures for setting VCR functions assume that the desired function has already been selected

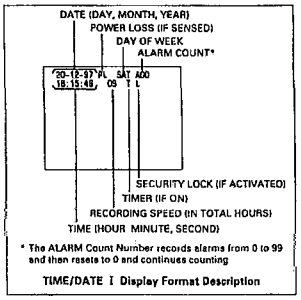
Notes:

1 During programming, holding the SET, UP, or DOWN button will move/change the displayed information at a rapid rate
2 The position of the TIME/DATE display on the monitor can be adjusted by using the H-POS and V-POS button on the front panel

SETUP (Continued)

SETTING THE TIME AND DATE

To set the TIME/DATE I display



* The ALARM Count Number records alarms from 0 to 99 and then resets to 0 and continues counting

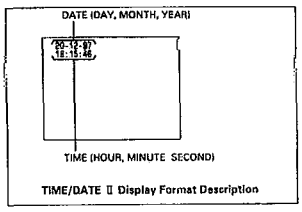
TIME/DATE I Display Format Description

1 Press the START/STOP button The day flashes on/off
2 Press the UP or DOWN button until the desired number appears on the monitor.
3 Press the SET button. The month flashes on/off.
4 Press the UP or DOWN button until the desired number appears on the monitor.
5 Press the SET button The year flashes on/off
6 Press the UP or DOWN button until the desired number appears on the monitor
7 Press the SET button The day of week flashes on/off
8 Press the UP or DOWN button until the desired day of week appears on the monitor.
9 Press the SET button The hour flashes on/off
10 Press the UP or DOWN button until the desired number appears on the monitor
11 Press the SET button The minutes flash on/off.
12 Press the UP or DOWN button until the desired number appears on the monitor.
13 Press the START/STOP button The seconds are reset to 00.
The TIME/DATE has been set

Notes:

- Perform the same procedure as when setting the time and date to make corrections after having set them. The minutes flash on/off when the START/STOP button is pressed
- To record time and date on the tape, display them on the monitor screen If they are not displayed on the monitor, they cannot be recorded on the tape

TIME/DATE II display



TIME/DATE II Display Format Description

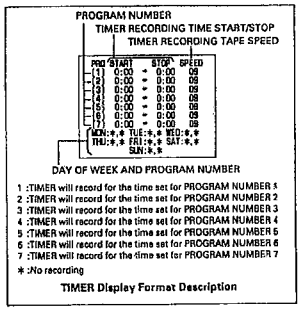
Select this function to display only the date and time on the monitor
Note: The day of the week cannot be set in this display Select the TIME/DATE I display to select the day of the week

SUMMER TIME FUNCTION

Press the FIELD ADV and UP buttons simultaneously in the stop mode; the hour display will be counted up by one
Press the FIELD ADV and DOWN buttons simultaneously to count the hour display down by one
You can change the hour display in one-hour steps without any limit by pressing the above buttons.
Note: Summer time cannot be set unless TIME/DATE I or II is displayed or during the timer recording standby mode

SETTING THE TIMER

To set the 24 Hour On/Off Timer function


PROGRAM NUMBER
TIMER RECORDING TIME START/STOP
TIMER RECORDING TAPE SPEED
PRO START STOP SPEED
(1) 0:00 - 0:00 09
(2) 0:00 - 0:00 09
(3) 0:00 - 0:00 09
(4) 0:00 - 0:00 09
(5) 0:00 - 0:00 09
(6) 0:00 - 0:00 09
(7) 0:00 - 0:00 09
MON:*,* TUE:*,* WED:*,*
THU:*,* FRI:*,* SAT:*,*
SUN:*,*
DAY OF WEEK AND PROGRAM NUMBER

1 :TIMER will record for the time set for PROGRAM NUMBER 1
2 :TIMER will record for the time set for PROGRAM NUMBER 2
3 :TIMER will record for the time set for PROGRAM NUMBER 3
4 :TIMER will record for the time set for PROGRAM NUMBER 4
5 :TIMER will record for the time set for PROGRAM NUMBER 5
6 :TIMER will record for the time set for PROGRAM NUMBER 6
7 :TIMER will record for the time set for PROGRAM NUMBER 7
* :No recording

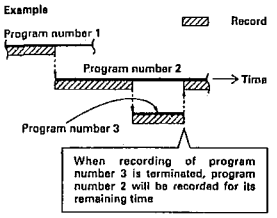
TIMER Display Format Description

1 Press the START/STOP button
The program number (1) flashes on/off
2 Press the SET button The start hours flash on/off
3 Press the UP or DOWN button until the desired number appears on the monitor
4 Press the SET button The start minutes flash on/off
5 Press the UP or DOWN button until the desired number appears on the monitor
6 Press the SET button The stop hours flash on/off
7 Repeat steps 3 through 5 to set the stop hours and minutes.
8 Press the SET button The timer recording speed flashes on/off
9 Press the UP or DOWN button until the desired number appears on the monitor
10 Press the SET button after setting the timer recording speed The program number of the next lower line flashes on/off
11 Repeat steps 2 through 9 to set the program to the other program numbers
12 Press the SET button after setting the program numbers (1) through (7)
The two program event locations of MON flash on/off
13 Press the SET button The first program event location of MON flashes.
14 Press the UP or DOWN button until the desired program number appears on the monitor
15 Press the SET button The other program event location of MON flashes on/off
16 Press the UP or DOWN button until the desired program number appears on the monitor
Notes:
- If you do not need to timer record two events a day, mark either event with an asterisk (*)
- If two asterisks are displayed, no timer recording is made on that day

17 After setting two program event locations of MON, press the SET button The two program event locations of the next day of the week flashes on/off.
18 Press the SET button The first program event location of the next day flashes
19 Repeat steps 12 through 16 to set the program event locations up to SUN
20 Press the START/STOP button when the TIMER has been set

Notes:
1 Programming the TIMER function does not activate it See TIMER recording, page 16.
2 To record the time and date press the PROGRAM button to display them.
3 When the preset START time is later than the STOP time, the recording will be made into the following day
4 When the START time and STOP time are the same, a recording will not be made
5 When the programs for timer recording overlap each other, recording will be switched to the program with the later recording start time

Example


Record
Program number 1
Program number 2
Time
Program number 3
When recording of program number 3 is terminated, program number 2 will be recorded for its remaining time

6 When two programs have the same start time, the program number with the earlier stop time has priority

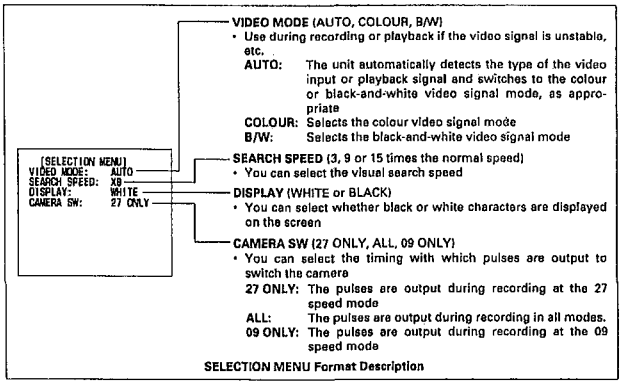
■ **To correct information**
1 Press the START/STOP button
2 Press the UP or DOWN button repeatedly until the item to be corrected (Program number or program event location of day of the week) flashes on/off
3 When the section to be corrected flashes on/off, press the SET button
- Press the SET button again so that only the digit to be corrected flashes on/off

4 Press the UP or DOWN button to correct the set information
5 After completing the correction, press the START/STOP button

SETUP (Continued)

SETTING THE VCR FUNCTIONS

The SELECTION MENU screen allows you to select the VCR operations and functions to match the applications

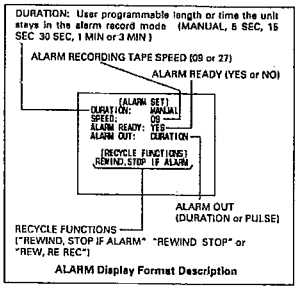

(SELECTION MENU)
VIDEO MODE: AUTO
SEARCH SPEED: X9
DISPLAY: WHITE
CAMERA SW: 27 ONLY
VIDEO MODE (AUTO, COLOUR, B/W)
• Use during recording or playback if the video signal is unstable, etc.
AUTO: The unit automatically detects the type of the video input or playback signal and switches to the colour or black-and-white video signal mode, as appropriate
COLOUR: Selects the colour video signal mode
B/W: Selects the black-and-white video signal mode
SEARCH SPEED (3, 9 or 15 times the normal speed)
• You can select the visual search speed
DISPLAY (WHITE or BLACK)
• You can select whether black or white characters are displayed on the screen
CAMERA SW (27 ONLY, ALL, 09 ONLY)
• You can select the timing with which pulses are output to switch the camera
27 ONLY: The pulses are output during recording at the 27 speed mode
ALL: The pulses are output during recording in all modes.
09 ONLY: The pulses are output during recording at the 09 speed mode

SELECTION MENU Format Description

1 Press the START/STOP button.
The VIDEO MODE option "AUTO" flashes on/off
2 Press the SET button repeatedly until the item the setting of which you want to change flashes
3 Press the UP or DOWN button to select the value or setting you want
4 After selecting, press the START/STOP button

SETTING THE ALARM

The ALARM function allows the user to set the recording duration, speed to be recorded and tape recycle for alarm recordings When a contact closure occurs at the ALARM IN input, the VCR automatically enters the RECORD mode at the pre programmed ALARM recording speed (See Alarm In, page 8 for a complete description of the ALARM sequence) The ALARM recording duration can last from 5 seconds to 3 minutes, or until the contact closure is reopened.
The ALARM recording speed can be pre programmed to 09 (real time) or 27
The checking signal is automatically recorded on the tape at the beginning of each ALARM recording Later, you can easily locate the start of each recording by using these signals when watching a recorded content See "ALARM INDEX SEARCH" on page 18 for details.
The TIME/DATE display is set as follows during ALARM display
—ALARM stars (*) will replace the colons (:).
—The recording speed will be changed to 09 or 27 which was selected at the "SPEED" setting in the ALARM display


DURATION: User programmable length or time the unit stays in the alarm record mode (MANUAL, 5 SEC, 15 SEC 30 SEC, 1 MIN or 3 MIN)
ALARM RECORDING TAPE SPEED (09 or 27)
ALARM READY (YES or NO)
(ALARM SET)
DURATION: MANUAL
SPEED: 09
ALARM READY: YES
ALARM OUT: DURATION
(RECYCLE FUNCTIONS)
REWIND, STOP IF ALARM
ALARM OUT
(DURATION or PULSE)
RECYCLE FUNCTIONS
("REWIND, STOP IF ALARM" "REWIND STOP" or "REW, RE REC")

ALARM Display Format Description

Notes:
- When the ALARM recording ends, the unit will return to the original record speed and restore the original record speed values to the TIME/DATE displays.
- Select 09 at the "SPEED" setting when the duration is within 30 seconds. If the 27 speed is selected, electronic "marks" are not recorded on the tape and alarm index search will not operate

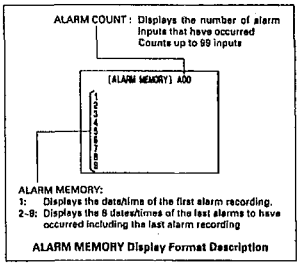
1 Press the START/STOP button The duration setting flashes on/off
2 Press the UP or DOWN button until the desired setting appears on the monitor (MANUAL, 5, 15, 30 SEC, 1, 3 MIN)
3 Press the SET button The record speed setting flashes on/off
4 Press the UP or DOWN button until the desired setting appears on the monitor (09, 27 HR)
5 Press the SET button. The alarm ready setting flashes on/off.
6 Press the UP or DOWN button to select the alarm ready function (YES or NO)
Select "YES" if you want to start alarm recording even in the normal record or stop mode
Select "NO" if you do not want alarm recording in the stop mode
7 Press the SET button The alarm out setting flashes on/off.
8 Press the UP or DOWN button to select the alarm out function. See "ALARM OUT" on page 8 for details. (DURATION or PULSE)
9 Press the SET button
The RECYCLE position flashes on/off
10 Press the UP or DOWN button to select the mode at the end of tape See "TAPE RECYCLE" on page 16 for details.
11 Press the START/STOP button.
Programming for the ALARM has been completed

Note: To record the time and date, press the PROGRAM button so they are displayed

SETUP (Continued)

ALARM MEMORY RECALL AND RESET

The VCR signals that an alarm has occurred by flashing the ALARM indicator. If a power loss has occurred, a "PL" will appear in the first line of the TIME/DATE I display.



ALARM MEMORY Display Format Description

To recall the ALARM display:

1 Press the PROGRAM button until the ALARM MEMORY display appears on the monitor.
2 Log the time/date information from the ALARM memory

After checking the alarm times and dates, press the ALARM RESET button to clear the ALARM memory

Notes:

- When the ALARM RESET button is pressed once, if "PL" is flashing, "PL" will disappear Press the button again to clear the ALARM memory.
- When "PL" is not flashing, press the ALARM RESET button once to clear the ALARM memory

OPERATION

TAPE RECORDING

CAUTION: Recording over existing recorded material will completely erase that material To prevent accidental recording over the end of a previous recording, advance the tape several seconds before beginning the next recording

1 Insert a video cassette; be sure the cassette safety tab is intact, or the tab slot is covered
2 Press the REC/PLAY HOURS button until the desired tape speed is observed on the tape speed indicator
3 Press the RECORD button to start recording
4 Press the STOP button to stop recording

Notes:

—The tape speed mode can be changed during recording
—AUDIO can be recorded at 09 and 27 tape speed modes
This VCR offers two special recording functions, TIMER recording and ALARM recording

REC CHECK

This function allows you to check whether the pictures are being recorded normally or not during recording
When the PLAY button is pressed during recording, the recorded picture is played back for several seconds Then recording will continue

TIMER RECORDING

This VCR can also record at any speed on TIMER command (turn on/off to record during any 24-hour time period) To program the TIMER function, refer to pages 11 and 12.
To operate the TIMER recording function, follow the tape recording procedure, step 1, then press the TIMER button to activate the programmed TIMER function

TAPE RECYCLE

The "RECYCLE FUNCTIONS" in the ALARM display determine the mode after recording at the end of tape
When the "REWIND, STOP IF ALARM" is selected:
—If no alarm has been received during the recorded period, the VCR automatically rewinds to the beginning of tape and continues recording.
—If an alarm has been received via the ALARM IN terminal during the recording period, the VCR automatically rewinds to the beginning of tape and then enters the STOP mode
When "REWIND, STOP" is selected:
—When the tape reaches the end during recording, the VCR automatically rewinds to the beginning of tape and enters the STOP mode
When "REW, RE-REC" is selected:
—When the tape reaches the end during recording, the VCR automatically rewinds to the beginning of tape and continues recording

Note: When "REWIND, STOP" or "REW, RE-REC" is selected, the VCR operates whether an alarm has occurred or not

Recycle	Alarms Present on Recorded Tape	Results
REWIND, STOP IF ALARM	YES	Rewinds tape, then stops Will not respond to alarm input.
	NO	Rewinds tape then continues to record.
REWIND, STOP	YES	Rewinds tape, then stops. Will not respond to alarm input.
	NO	Rewinds tape, then stops Will not respond to alarm input.
REW, RE-REC	YES	Rewinds tape then continues to record
	NO	Rewinds tape then continues to record.

OPERATION (Continued)

ALARM RECORDING

This VCR can automatically record at one of two speeds (09 or 27) on ALARM command
To program the ALARM function refer to page 14
The remote/contact switch must be connected to the VCR See page 9.
To operate the ALARM recording in the stop mode: follow the tape recording procedure, step 1, then select "YES" of the ALARM READY menu in the ALARM display

MASTER SYSTEM RESET

Press the two reset buttons simultaneously to provide a MASTER SYSTEM RESET Use to reset abnormal displays and operations The programmable features must be re programmed

PLAYBACK

1 Rewind the tape to the desired beginning point (Press the REWIND button, and observe the digital counter until the desired number appears) Press the stop button
2 Press the REC/PLAY HOURS button until the desired tape speed is observed on the tape speed indicator When L27 is displayed, the VCR will enter the slow playback mode.
3 Press the PLAY button to initiate forward playback
To select reverse playback, press the PLAY button and then press the REVERSE PLAY button Forward playback resumes when the PLAY button is pressed
Notes:
- When the REVERSE PLAY button is pressed in the forward playback mode to set the VCR to the reverse playback mode, the first several frame images may be distorted.
- When the REVERSE PLAY button is pressed during playback at the 27 hour speed, reverse play will be performed automatically at the L27 speed.
- The VCR will automatically enter the STOP mode if the reverse play is continued for approx 1 minute

4 Press the STOP button to stop playback

Notes:

—The tape speed mode can be changed during playback
—When a picture recorded in the 09 mode is played back in the 27 mode, it includes noise It is recommended that you play back pictures recorded in the 09 mode at modes higher than L27.
—When the tape reaches the end, the unit automatically rewinds to the beginning of the tape and then goes to the STOP mode.
—If the monitor display exhibits distortion in the upper part of the picture, adjust the horizontal hold control on the monitor.
—Adjust the SLOW TRACKING control to minimize noise when playing back at slow speed (L27) or in the FIELD ADVANCE/REVERSE mode

STILL PLAYBACK

When the STILL button is pressed during playback, a still picture can be seen To start again press STILL or PLAY button and the VCR will continue playback

Notes:

- When still playback continues for more than 5 minutes, the AUTO-PROTECT circuit operates and the VCR will enter the STOP mode automatically.
- If the picture shakes up and down during still playback, adjust the V LOCK control

V.LOCK ADJUST

If the picture shakes up and down during still playback, adjust the picture by the following procedure

1 Play back a tape, recorded in the 09 mode, in the still playback mode
- With some TVs, if the V.LOCK control is adjusted when playing a tape recorded in modes other than 09, shaking of the still picture may not stop.

2 Adjust the V LOCK control so the shaking of the picture stops

Note: Shaking of the picture may not be stopped completely depending on the TV used

PLAYBACK IN THE FIELD ADVANCE/REVERSE MODES

When you press the FIELD ADVANCE or FIELD REVERSE button during still playback mode, one field at a time can be seen.
Operates only after STILL button has been pressed

Notes:

- An AUTO PROTECT circuit automatically returns the unit to the STOP mode if the STILL or PLAY button is not pressed again or if FIELD ADVANCE or FIELD REVERSE button is not pressed in any five minute period.
- When the FIELD REVERSE button is pressed in the still playback mode to set the VCR to the field reverse mode, the first several frame images may be distorted

VISUAL SEARCH (High Speed Scan)

Note: The visual search function allows the recorded material to be reviewed at 3, 9 or 15 times the 09 hour speed mode

1 Press the PLAY button.
2 Press the SEARCH (F.FWD) button to select the VISUAL SEARCH FORWARD mode, or press the SEARCH (REWIND) button to select the VISUAL SEARCH REVERSE mode
3 Press the PLAY button again to resume normal playback.

Notes:

- The visual search speed can be changed using the SELECTION MENU screen
- The playback picture will have some noise in the visual search mode This noise may not be fixed In the picture, but may flow from top to bottom (or from bottom to top)

ALARM INDEX SEARCH

The alarm index search method causes electronic "marks" to be recorded on the tape at each point when the ALARM recording begins
Later, the VCR can find these "marks" automatically, making it easy to find the beginning of each alarm for playback.
These check points are permanent until the tape is erased A check mark is recorded automatically each time the VCR starts ALARM recording

1 Press the PLAY button to start playback
2 Press the ALARM INDEX button
3 Press the REW or F.FWD button The recorder enters VISUAL SEARCH mode
4 When the VCR finds a mark, it enters normal playback mode.
5 Press REW or F FWD button again to find next "marked" recording The recorder advances tape to the next marked position
6 Press the ALARM INDEX button again to release alarm index search

Notes:

1 Be careful as no alarm input can be detected for 5 seconds immediately after the visual search mode is entered by pressing the REW or F FWD button during the alarm index search mode
2 When tapes recorded by other VCRs are played in the alarm index search mode, the VCR may enter the play mode in a meaningless position
3 When you have selected "MANUAL" at the DURATION setting in the ALARM display, and the duration of an alarm recording is shorter than the values shown below, "marks" may not be detected

SPEED	
09	.5 seconds
27	60 seconds

TO SECURE THE VCR

This feature restricts unauthorized use, tampering, or accidental changes in the operation of the VCR
The security feature does not operate during programming Simultaneously press the SET and DOWN buttons in the program set area of the front panel. The security message "L" appears in the TIME/DATE I display and the LOCK indicator lights in the VCR's display
To release the security feature, press the SET and DOWN buttons simultaneously

PROBLEM GUIDE

If you are having this kind of trouble:	Check these things:
▪ No power (No indicators ON)	▫ Check to see if unit is plugged in (Power at supply outlet?)
▪ Recorder fails to respond to user command/ operation	▫ Perform MASTER SYSTEM RESET See page 17.
▪ No monitor picture	▫ Carefully check monitor/VCR/camera connectors.
▪ Poor picture during monitor viewing (in the RECORD or STOP mode)	▫ Check monitor/camera adjustments
▪ Black streaks on picture during 09 or 27 mode playback	▫ Adjust the TRACKING control (may need to be returned to center position if previously adjusted). The TRACKING control is only active for the 09 or 27 mode ▫ Replace cassette. ▫ Clean video heads.
▪ Recording or playback cannot be done	▫ Remove cassette and reinsert ▫ Check the LOCK indicator on the front panel If the indicator is lit, press both SET and DOWN buttons simultaneously to release the security lock.
▪ RECORD functions not operate	▫ Check the TAB indicator is lit ▫ See Note on page 9.
▪ PLAY function not operate	▫ Be sure there is a cassette in the unit.
▪ TIME/DATE information not displayed on the MONITOR	▫ Press the PROGRAM button. ▫ Perform MASTER SYSTEM RESET See page 17.
▪ TIMER recording was not done	▫ TIMER may not have been set properly. ▫ Check for SAFETY TAB of cassette ▫ TIME and DATE are not correct ▫ Cassette tape length may have been exceeded. Multiple ALARMs used up tape.
▪ REWIND or FAST FORWARD does not operate	▫ Tape may already be rewound or be at the end of tape.
▪ Unable to SELECT/CHANGE program feature	▫ Check the LOCK indicator on the front panel. If the indicator is lit, press both SET and DOWN buttons simultaneously to release the security lock.
▪ The VCR does not operate if an operation button is pressed	▫ Press the EJECT button to remove the cassette, then restart VCR operations

CHAPTER 2 DISASSEMBLY

1.CASES AND CIRCUIT BOARDS SECTION

1.BEFORE STARTING DISASSEMBLY

[Removal Procedure]
Dismantle each component in numerical order [(A),(B),(C),...].

[Reinstallation Procedure]
Reinstall eachcomponent in the reverse order to removal when otherwise not specified.

Identifications and Locations of Circuit Boards

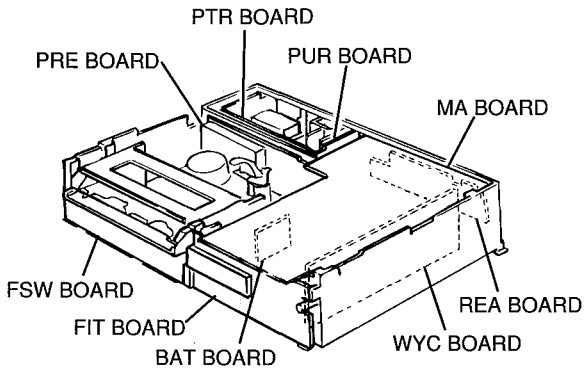


Fig. 2-1 Top View

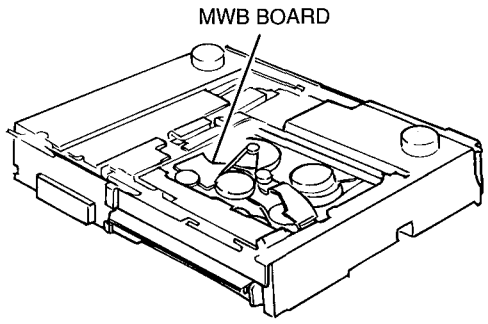


Fig. 2-2 Bottom View

2.DISASSEMBLY PROCEDURE

[How to use the parts hierarchy chart]
1)Locate the part to be replaced.
2)Check the parts in the ranks above the part to be replaced and start dismantling.
3)Replace the difective part and reinstall the parts in the reverse order to that show in the parts hierachry chart.

[Cautions]
1)Dismantle parts in the eject state.
2)Parts can be dismantled in a different way from that shwn here.

Parts Heirarchy Chart

Parts to Removed (First Block)	Item	Parts to Removed (Second Block)	Item	Parts to Removed (Third Block)	Item
Top Cover	2-3	PRE Board PTR Board PUR Board	2-10	AF Mechanism	2-11
Bottom Cover	2-4	MWB Board	2-12		
Front Panel	2-5	Cassette Holder	2-11		
		Front Door ☆	2-5		
		Cassette Door	2-6		
		FSW Board FIT Board	2-7		
		WYC Board BAT Board	2-9	MA Board	2-9
Rear Panel	2-8	REA Board	2-8		
Chassis					

☆:This can be removed if components in the first block are not removed.

Disassembly Procedure Diagram

1	Top Cover / Bottom Cover

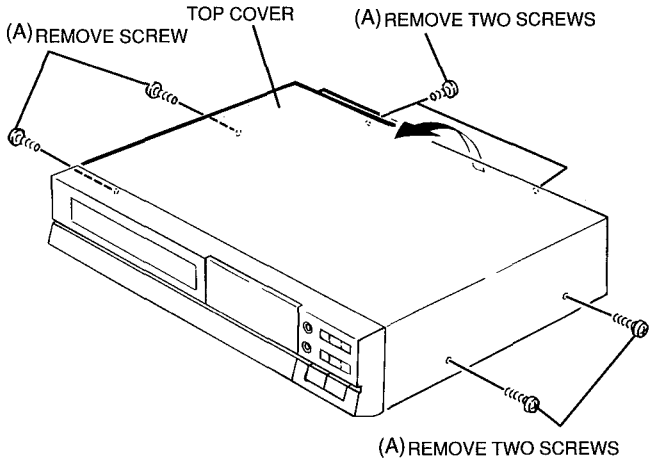


Fig. 2-3

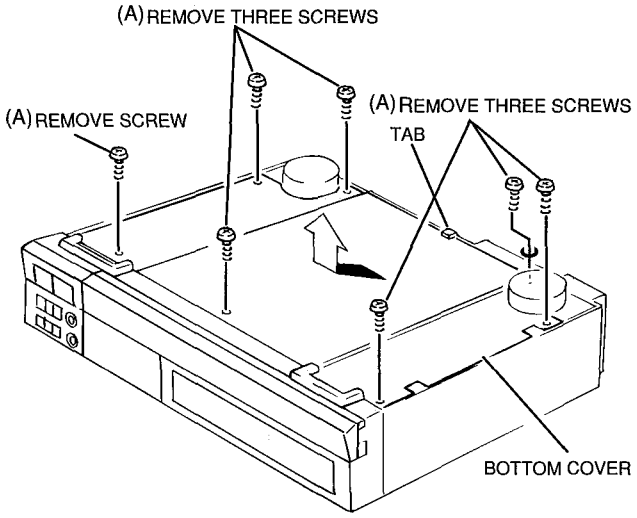


Fig. 2-4

2	Front Panel / Front Door / Cassette Door

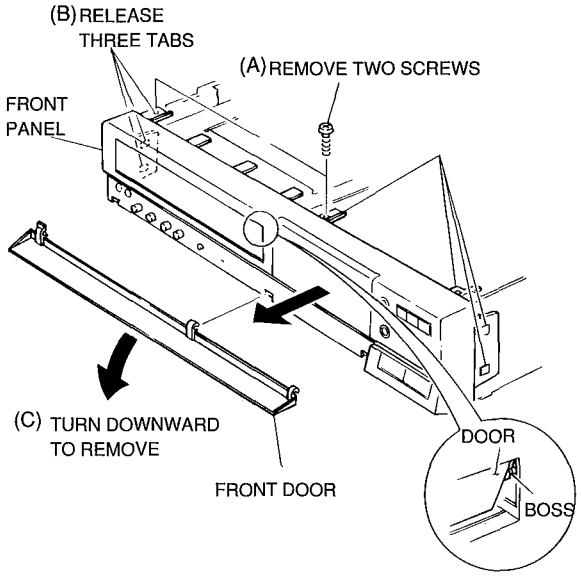


Fig. 2-5

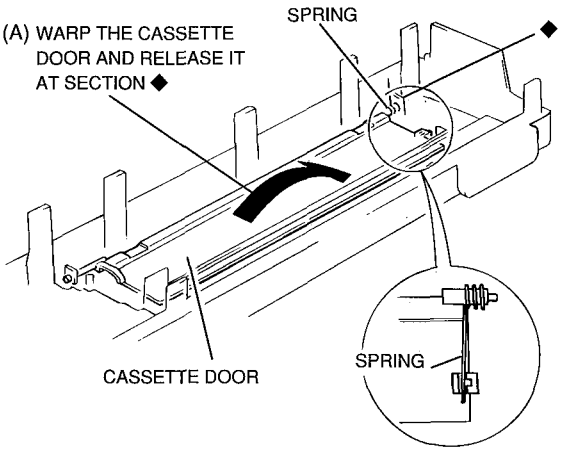


Fig. 2-6

3	FSW Board / FIT Board

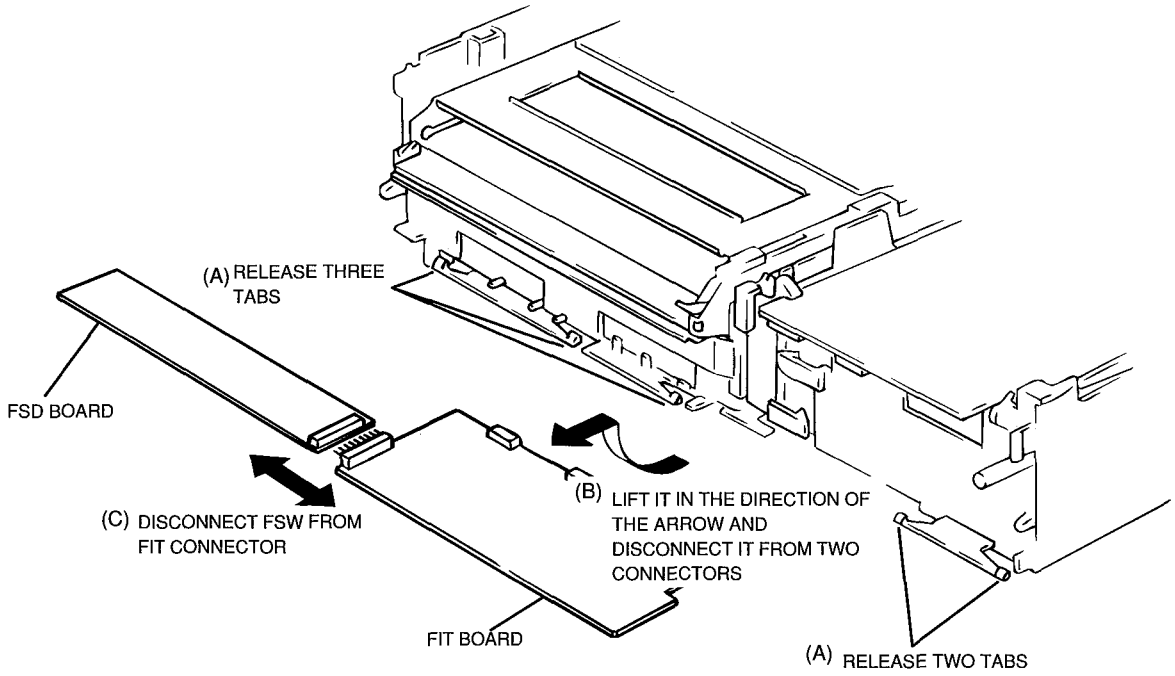

(A) RELEASE THREE TABS
FSD BOARD
(C) DISCONNECT FSW FROM FIT CONNECTOR
(B) LIFT IT IN THE DIRECTION OF THE ARROW AND DISCONNECT IT FROM TWO CONNECTORS
FIT BOARD
(A) RELEASE TWO TABS

Fig. 2-7

4	Rear Panel / WYC Board / BAT Board / REA Board / MA Board

★ 1: This screw have a different shape from other screws.

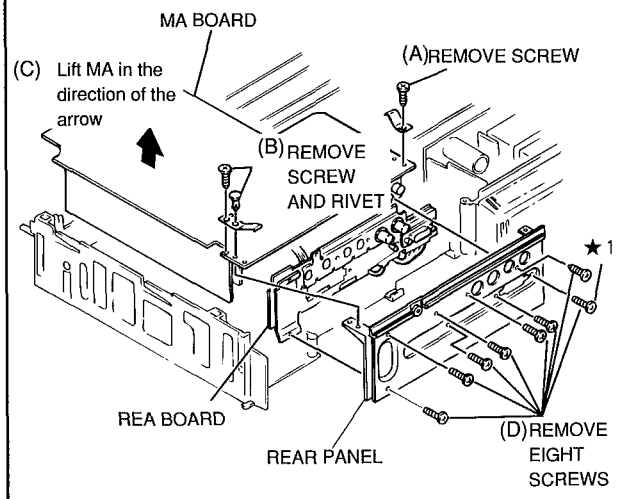


Fig. 2-8

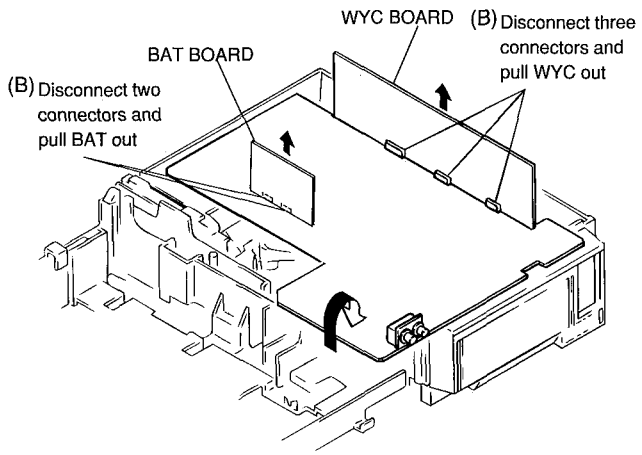


Fig. 2-9

5	PRE Board / PTR Board / PUR Board

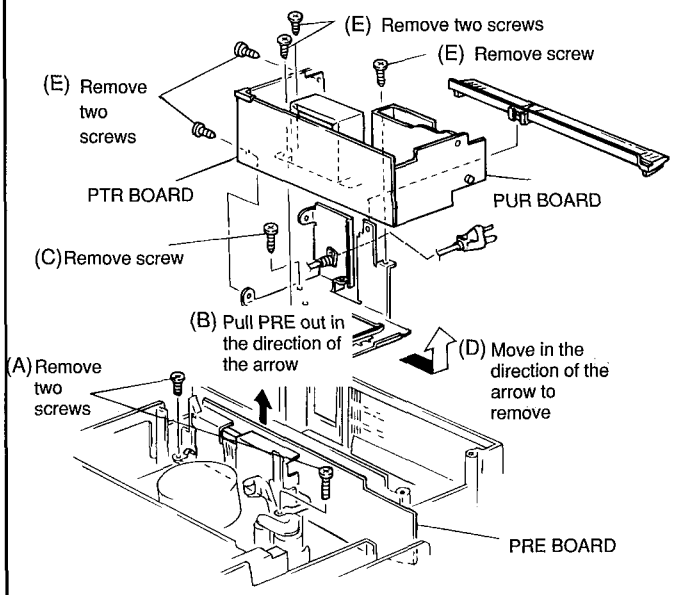

(E) Remove two screws
(E) Remove screw
(E) Remove two screws
PTR BOARD
PUR BOARD
(C) Remove screw
(B) Pull PRE out in the direction of the arrow
(D) Move in the direction of the arrow to remove
(A) Remove two screws
PRE BOARD

Fig. 2-10

6	Cassette Holder / AF Mechanism

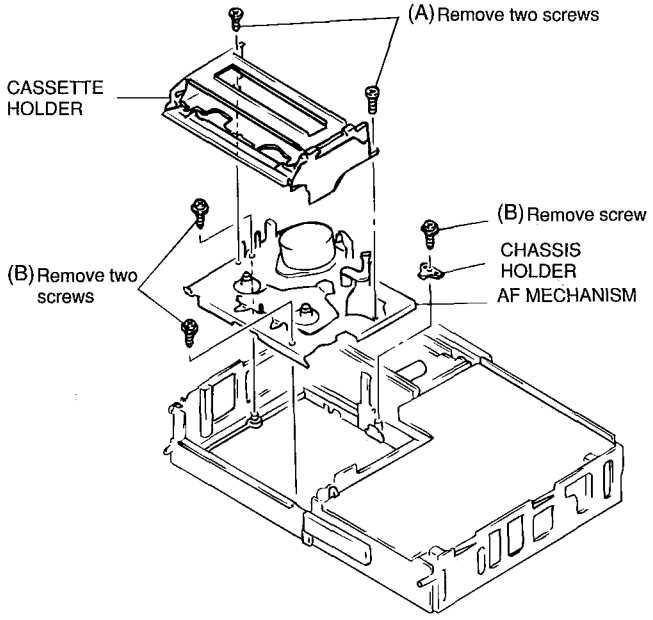


Fig. 2-11

7	MWB Board

★ 1: When reinstalling the mode gear, be sure to match its phase (position).
(See the AF mechanism edition.)

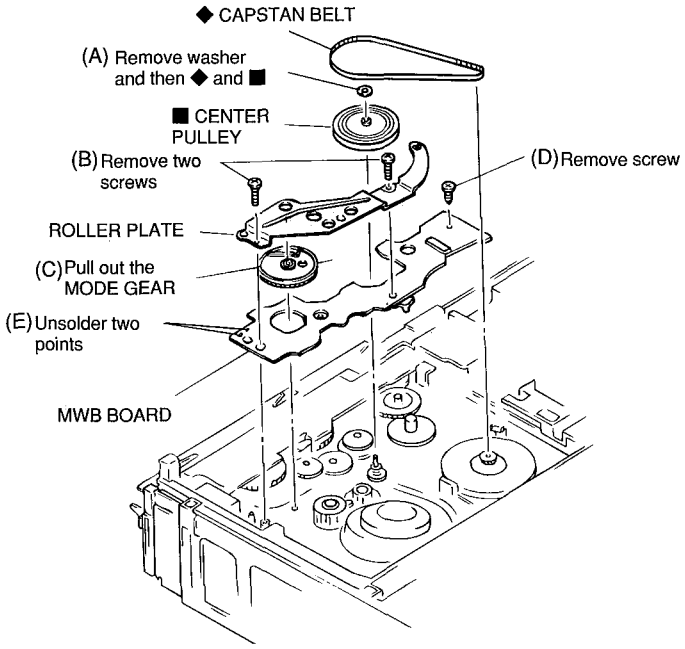


Fig. 2-12

2.MECHANISM SECTION

The AF mechanism is used as the mechanical section of this VCR. Refer to the following manual when dismantling the mechanical section.

◆ AF Mechanism edition (No.4412E) "CHAPTER 1 DISASSEMBLY"

1.PHOTOS OF MECHANISM (Refer to these photos when reinstalling)

1) Top view of Mechanism

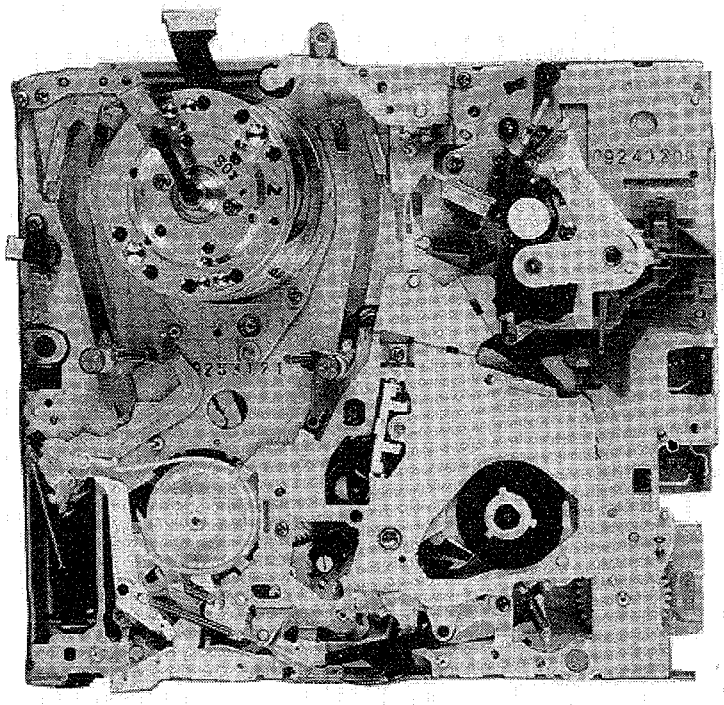


Fig. 2-13

2) Bottom view of Mechanism

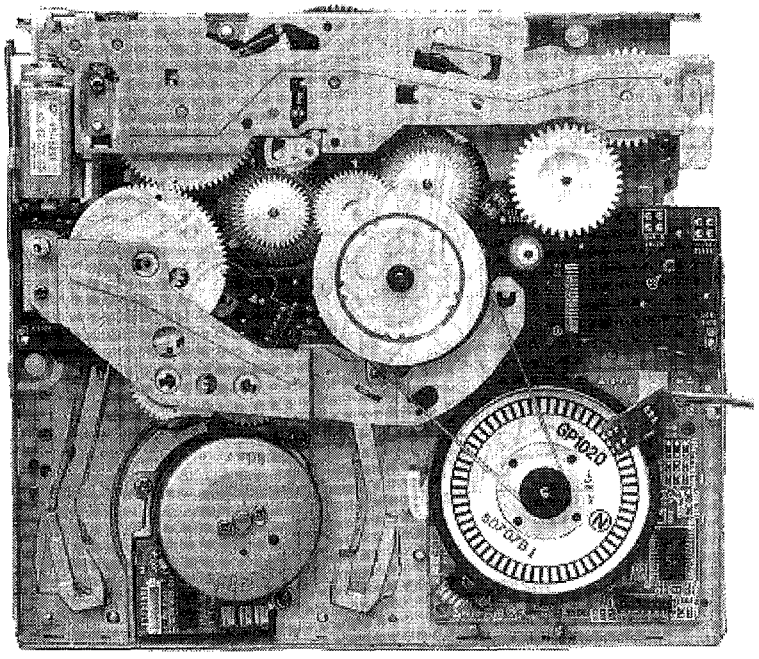


Fig. 2-14

MEMO

CHAPTER 4 ELECTRIC CIRCUIT ADJUSTMENT

1.Circuit Board Locations and Adjustment / Service Position

The electrical adjustments other than the 8.42MHz VCO adjustment can be done when only the top cover is removed.

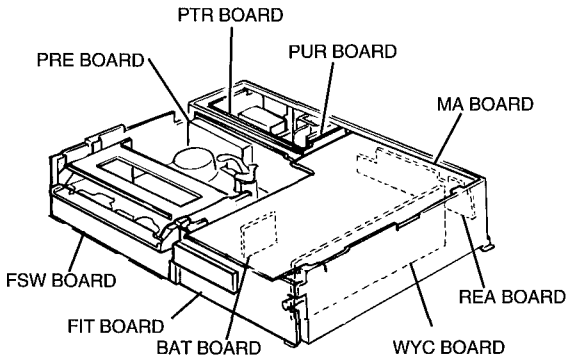


Fig. 4-1

2.Test Equipment and Tapes Necessary for Adjustments

1) Dual-trace oscilloscope
2) Colour bar generator
3) Colour monitor TV (with A/V jacks)
4) Digital voltmeter (DVM)
5) VTVM
6) Alignment tape (30HMPE-3)
7) Blank tape

3.Before Starting Adjustment

1)The following conditions apply when otherwise not specified.
- Oscilloscipe probe → 10:1
- Oscilloscope synchronisation → Internal sync
- Ground of test equipment → TP1527 (MA board)

2)When performing more than one adjustment, follow the order of times shown here.

4.Preset Position of Switches and Controls During Adjustment

1)Positions of controls
- SHARPNESS CONTROL : Optimum position
- TRACKING : Center
- SLOW TRACKING : Center
- V.LOCK : Optimum position

2)OSD Setting [SELECTION MENU]
- VIDEO MODE : AUTO
- SEARCH SPEED : × 9
- DISPLAY : WHITE
- CAMERA SW : 27 Only

※:The OSD positions are set at the factory above.

5.Procedure to Reset (Initialize) the VCR

This VCR can be reset to the state set at the factory by the following procedure.

Table. 4-1

	IC	Procedure	Object to be reset
1	System control μ P(IC1901)	Press [S1303]	System control μ P
2	Main μ P (IC1701)	Press [S1303] and [S1311] simultaneously	· Timer · OSD settings
3	EEP ROM (IC1702)	Press [REV.PLAY] [SET] and [ALARM RESET] simultaneously	· Trouble memory · Cylinder use time (◆) · Total use time

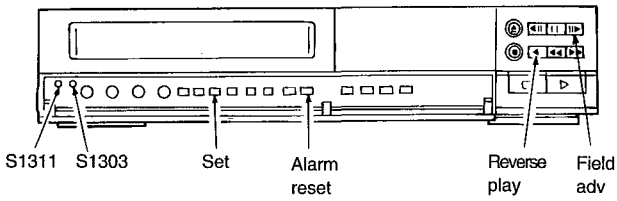


Fig. 4-2

◆:Cylinder time of use
This VCR has function which displays the accumulated time of cylinder rotation as a reference for cylinder replacement. Be careful as all data including the accumulated time is cleared when the EEP ROM is initialized.
The following shows the display of the cylinder time of use and how to reset it without resetting other values.

- Display method (the total use time is also displayed)
  Press [F.ADV] and [SET] simultaously (displayed in the OSD).
- Resetting the time of use only
  Short IC1701 (Main μ P) pin 16 to ground.

6.Connecting Test Equipment

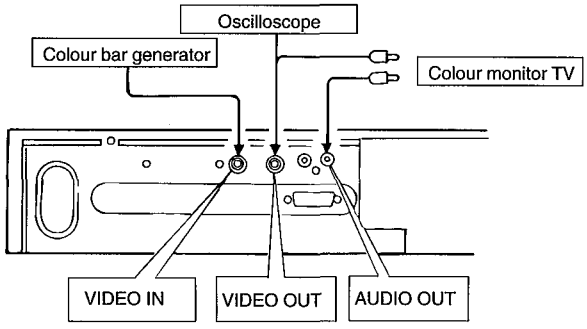


Fig. 4-3

7.Location of Components on Circuit Boards

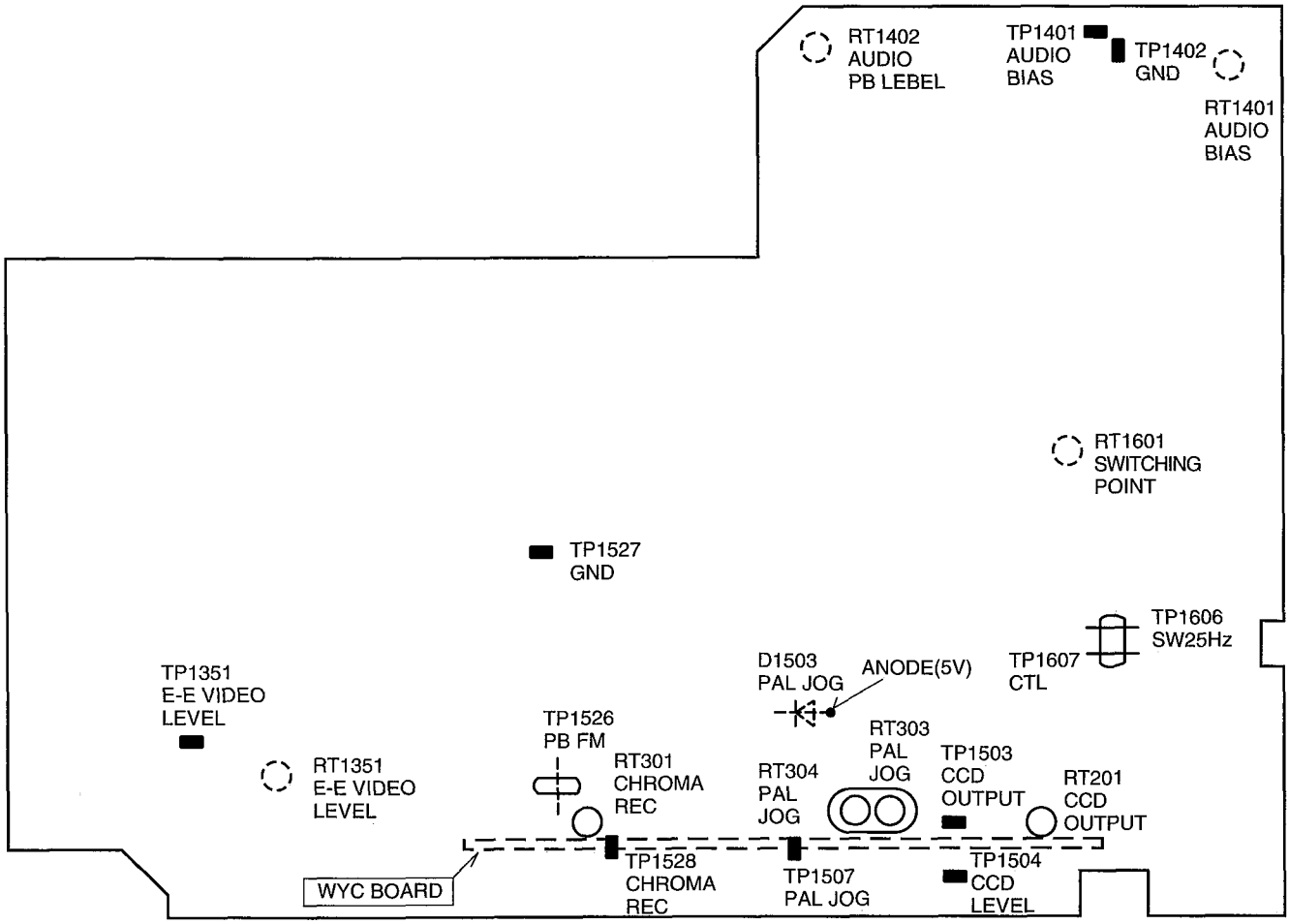


Fig. 4-4 Main (MA) Circuit Board [Side B]

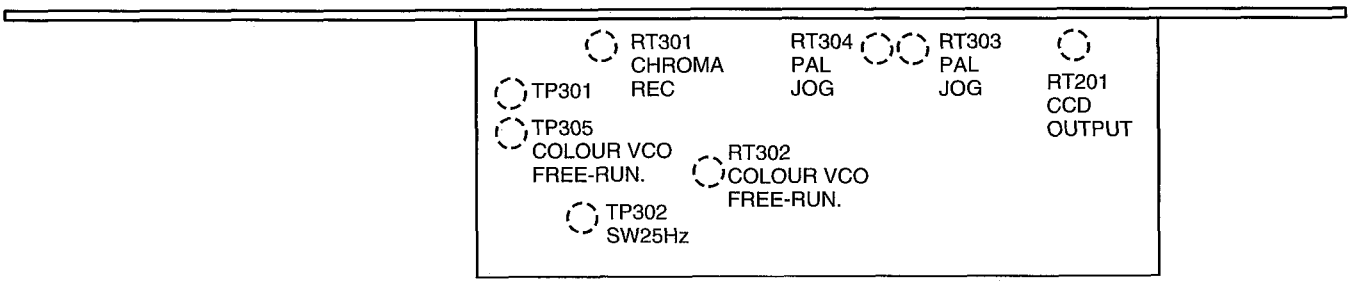


Fig. 4-5 Y/Chroma (WYC) Circuit Board [Side B]

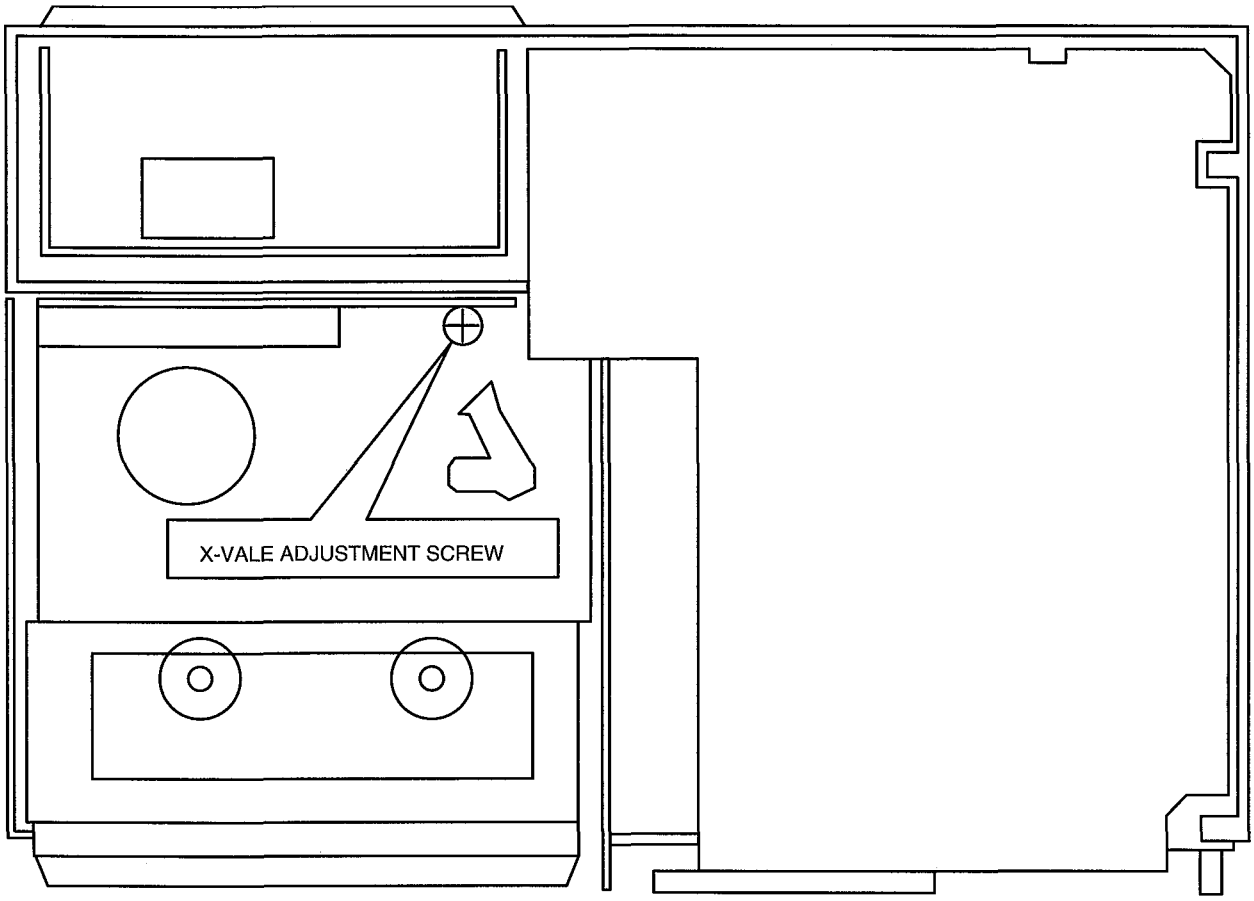


Fig. 4-6 Top View of Unit

8.Adjustment Procedure

8-1. Servo Circuit Adjustments

(1) Head switching point adjustment (See Fig.4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To set the video head switching point during play to approximately the centre where the CH-1 and CH-2 envelopes overlap each other.

Fault:
- The vertical sync signal is degraded and vertical jitter occurs.
- Switching noise appears across the bottom of the screen.

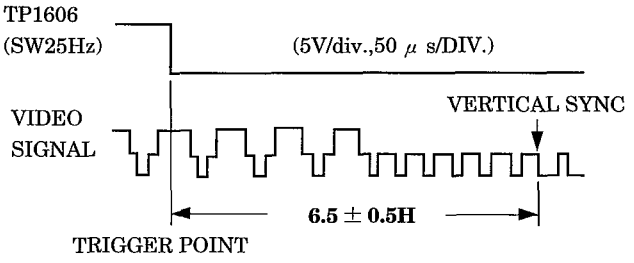
Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Oscilloscope	· CH-1:Video Out · CH-2: TP1606 [MA board]	· Play alignment tape (09 mode) · Tracking volume: Centre	· RT1601 [MA board]
· Alignment tape			

● Adjustment procedure

1)Vertical sync signal: Set to 6.5 ± 0.5H from the trailing edge (trigger position) of the SW25Hz pulse.

<<Setting of oscilloscope>>
- Trigger with CH-2.
- Set the sync slope to "-".

● Waveforms



(2) X-Value adjustment (See Fig.4-6)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To obtain compatibility with other VCRs.

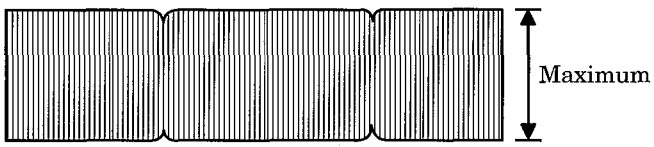
Fault:
Noise occurs when tape recorded by another VCR is played back.

Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Oscilloscope	· CH-1: TP1526 [MA board] · CH-2: TP1606 [MA board]	· Play alignment tape (09 mode) · Tracking volume: Centre	· X-value adjustment screw
· Alignment tape			

● Adjustment procedure

1) Turn the X-value adjustment screw to maximize the FM output.

● Waveforms



(100mV/div.,20 μ s/div.)

8-2. Video Circuit Adjustments

(1) E-E video level adjustment (See Fig.4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To set the video output level in the E-E mode to the specified value.

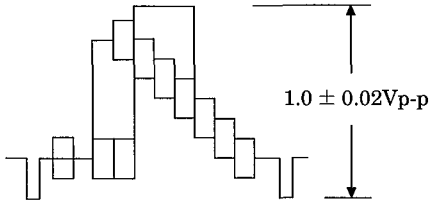
Fault:
The correct tint and brightness cannot be obtained.

Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Oscilloscope	· TP1351 [MA board]	· E-E mode. · Input the colour bar signal.	· RT1351 [MA board]
· Colour bar generator	· VIDEO IN		

● Adjustment procedure

1)Adjust RT1351 so the output level is 1.0Å}0.02Vp-p.

● Waveforms



(200mV/div.,20 μ s/div.)

(2) Colour VCO free-running adjustment (See Fig.4-5)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To set the colour VCO frequency to the specified value.

Fault:
No colour.

Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Frequency counter	· TP305 [WYC board]	·Set the no-signal input state in the eject mode.	· RT302 [WYC board]

● Adjustment procedure

1) Short-circuit TP301 and TP311(GND).
2) Short-circuit TP302 and TP311(GND).
3) Adjust RT302 so the frequency counter reads 627±5kHz.

(3) CCD level adjustment (Fig. 4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To align the Y level of the main playback signal and that of the 1H delayed signal.

Fault:
· The S/N deteriorates.
· Dropout cannot be compensated.

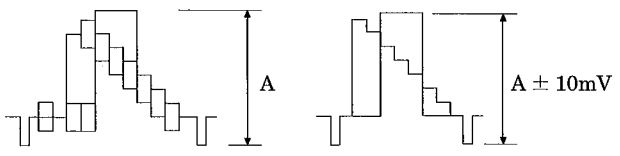
Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Oscilloscope	· TP1503 [MA board] · TP1504 [MA board]	· Record colour bar signal and play it back. (09 mode)	· RT201 [WYC board]
· Alignment tape			

● Adjustment procedure

1) Adjust RT201 so the waveform level at TP1504 becomes ± 10mV of that at TP1503(section A).

● Waveforms

(200mV/div ,50ms/div.)



(4) Chroma recording level adjustment (See Fig. 4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To set the chroma recording level to the optimum value.

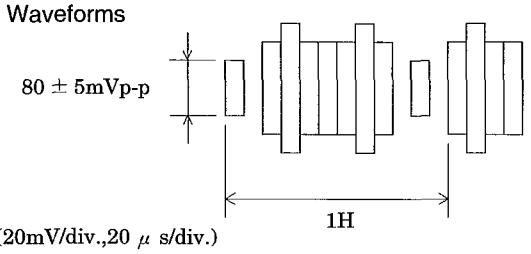
Fault:
Colour becomes defective.

Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Oscilloscope	· TP1528 [MA board]	· REC mode. (09 mode) · Input the colour bar signal.	· RT301 [WYC board]
· Colour bar generator	· VIDEO IN		
· Blank tape			

● Adjustment procedure

1) Adjust RT301 so the chroma burst level is 80 ± 5mVp-p.

● Waveforms



(20mV/div.,20 μ s/div.)

(5) PAL Jog adjustment (See Fig. 4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete

Purpose:
To set the output signal to the specified phase position.

Fault:
Colour becomes defective.

Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· Vectorscope	· Video out	· Play alignment tape. (09 mode/1kHz section)	· RT1402 [MA board]
	· TP1507 [MA board] · D1503(anode)[MA board] · TP1527 [MA board]		

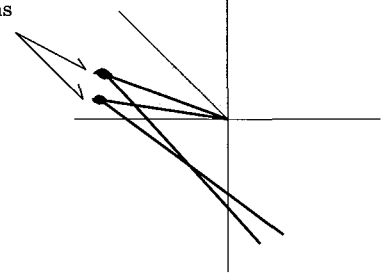
● Adjustment procedure

1) Connect a vectorscope to video out.(Set the vectorscope to the +V mode.)
2) Align the two burstphases.
3) Short-circuit TP1507 and D1503(anode: 5V).
4) Adjust RT303 to align the phases of the two vectors in the YL section.
5) Release the short-circuit.
6) Short-circuit TP1507 and TP1527(GND).
7) Adjust RT304 to align the phases of the two vectors in the YL section.
8) Release the short-circuit.
9) Repeat steps 3) and 4).

● Waveforms

[Step 2]
Align the two burst phases

[Steps 4 and 7]
Align the phases of the two YL sections



8-3.Audio Circuit Adjustment

(1) Audio bias level adjustment (See Fig. 4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete			
Purpose: To set the recording bias level to the optimum value.		Fault: · High-frequency response deteriorates. · Sound tends to be distorted.	
Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· VTVM	· TP1401 [MA board] · TP1402 [MA board]	· No-signal record mode. (09 mode)	· RT1401 [MA board]
· Blank tape			
● Adjustment procedure 1) Adjust RT1401 so the VTVM reads 2.7 ± 0.1mV.			

(2) Audio playback level adjustment (See Fig. 4-4)

● Purpose of Adjustment and Fault Occurring if Incomplete			
Purpose: To set the audio playback level to the specified value.		Fault: The correct volume cannot be obtained.	
Test Equipment/Jigs	Test Equipment Connection Point	State of VCR	Adjustment Point
· VTVM	· Audio out	· Play alignment tape. (03 mode/1kHz section)	· RT1402 [MA board]
· Alignment tape			
● Adjustment procedure 1) Adjust RT1402 so the VTVM reads -8.0 ± 0.5dBs.			

9.Trouble Mode Function

This VCR has a function which displays mechanism malfunctions, etc. When the system control μ P (IC1901) detects information on a defect in the mechanism control system, it transfers bit data to the main μ P (IC1701). The trouble memory data written to the EEP ROM can also be displayed on the OSD screen.

9-1. Trouble Mode

Table. 4-2 Details of Error

	Name of error	Major cause
1	Cylinder Lock	SW30Hz is not normal.
2	Mecha.Lock 1	CFG is not detected for more than 400ms during unloading.
3	Mecha.Lock 2 ~ 10	The object position cannot be detected within the specified time during operation.
4	Reel.Lock 1	The specified CFG is not input when reel lock has occurred.
5	Reel.Lock 2	The specified CFG is input when reel lock has occurred

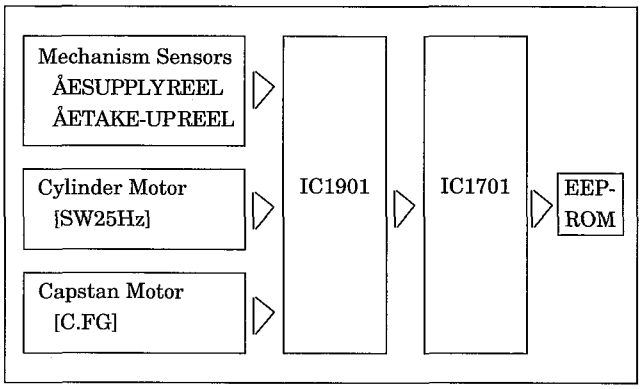


Fig. 4-8 Malfunction Detection

9-2. Trouble Memory Data Display
(1)Display method

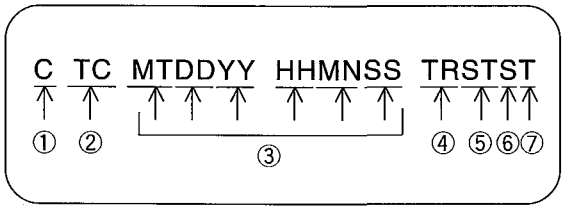


Fig. 4-9 OSD Screen

- Procedure to display the trouble memory
  Press **STOP** , **DOWN** and **H.POS** simultaneously.
- Procedure to erase the trouble memory
  Refer to "5.PROCEDURE TO RESET THE VCR" in this chapter.

(2)Datails of display (See Fig.4-9)

1. C: Number of times

Table. 4-3

Display	Details
1	First malfunction
0	Second malfunction

CAUTION: When malfunctions occurr 10 times or more, the first and the last 8th malfunctions are displayed.

2. T C: Total number of times

3.Data when malfunction occurred
→ M T: Month
→ D D: Day
→ Y Y: Year
→ H H: Hour
→ M N: Minute
→ S S: Second

4. T R: Trouble data

Table. 4-4

Display	Details	Mecha.Position
C Y	CYLINDER LOCK	
M 0	MECHA.LOCK 1	
M 1	MECHA.LOCK 2	FL
M 2	MECHA.LOCK 3	Unload
M 3	MECHA.LOCK 4	Stop
M 4	MECHA.LOCK 5	FF/REW
M 5	MECHA.LOCK 6	Rec/Play
M 6	MECHA.LOCK 7	Slow
M 7	MECHA.LOCK 8	Reverse slow
M 8	MECHA.LOCK 9	Reverse
M 9	MECHA.LOCK 10	Transient
R 1	REEL LOCK 1	
R 2	REEL LOCK 2	

5. S T: Status

Table. 4-5

Display	Details
S T	Normal stop
F 1	FF(when calculating tape remaining)
F 2	FF(when executing soft landing)
F 3	FF(high-speed state)
R 1	REW(when calculating tape remaining)
R 2	REW(when executing soft landing)
R 3	REW(high-speed state)
R S	Rec Pause
R D	Rec
P S	Still
P L	Play
R P	Reverse play
F A	Field Advance
F R	Field reverse
C U	CUE
R V	Review

6. S: Tape speed

Table. 4-6

Display	Details
0	0 9
1	2 7
5	L 2 7

7. T: Tape position

Table. 4-7

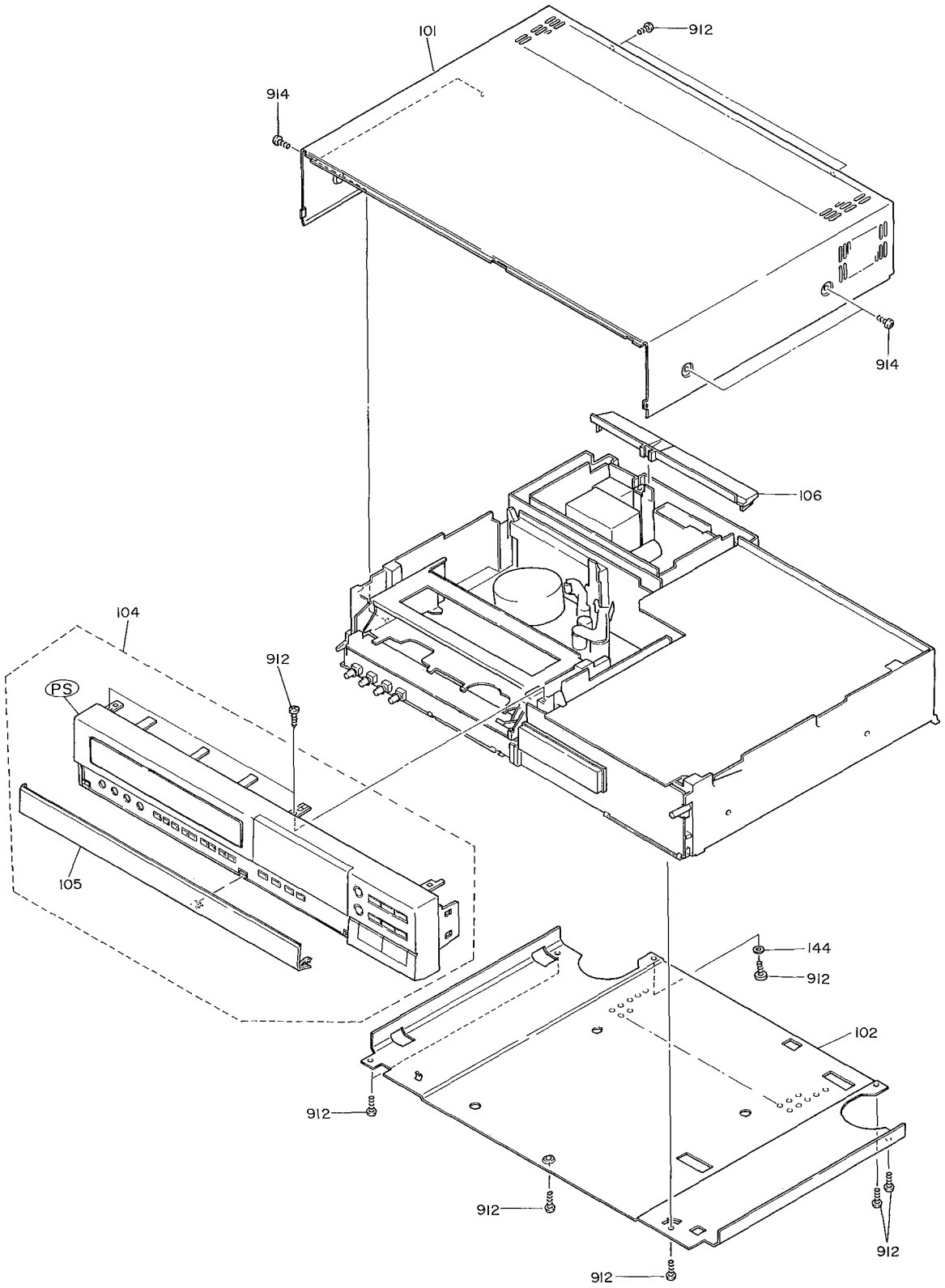
Display	Details
-	Remaining tape calculation incomplete
0	Near the end of tape
1	·
2	·
3	·
4	·
5	·
6	·
7	Near the start of tape

MEMO

CHAPTER 5 EXPLODED VIEWS

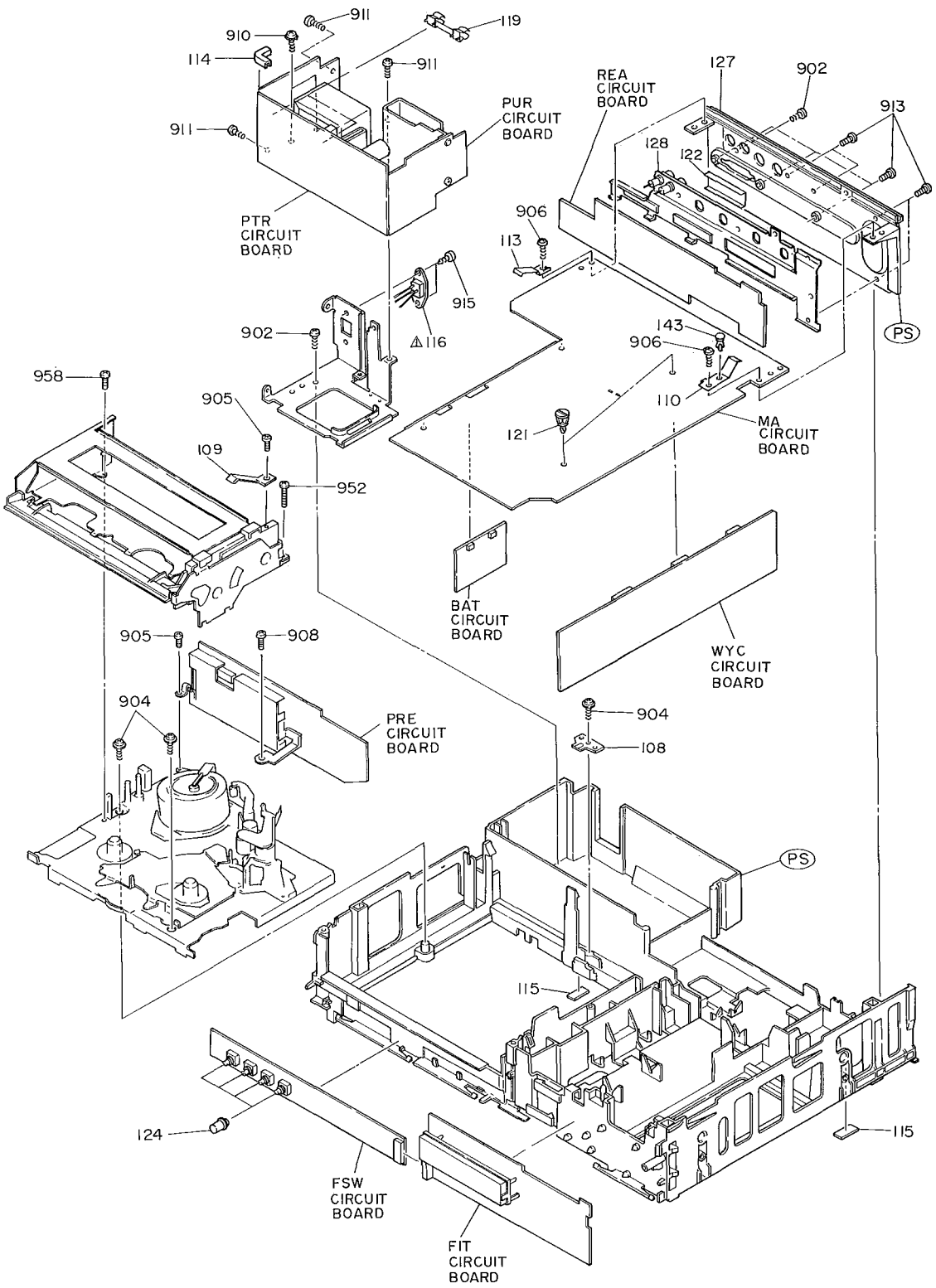
1. CABINET (CASES) SECTION

NOTE: The synthetic resin members that can be dismantled are shown by abbreviations using letters.

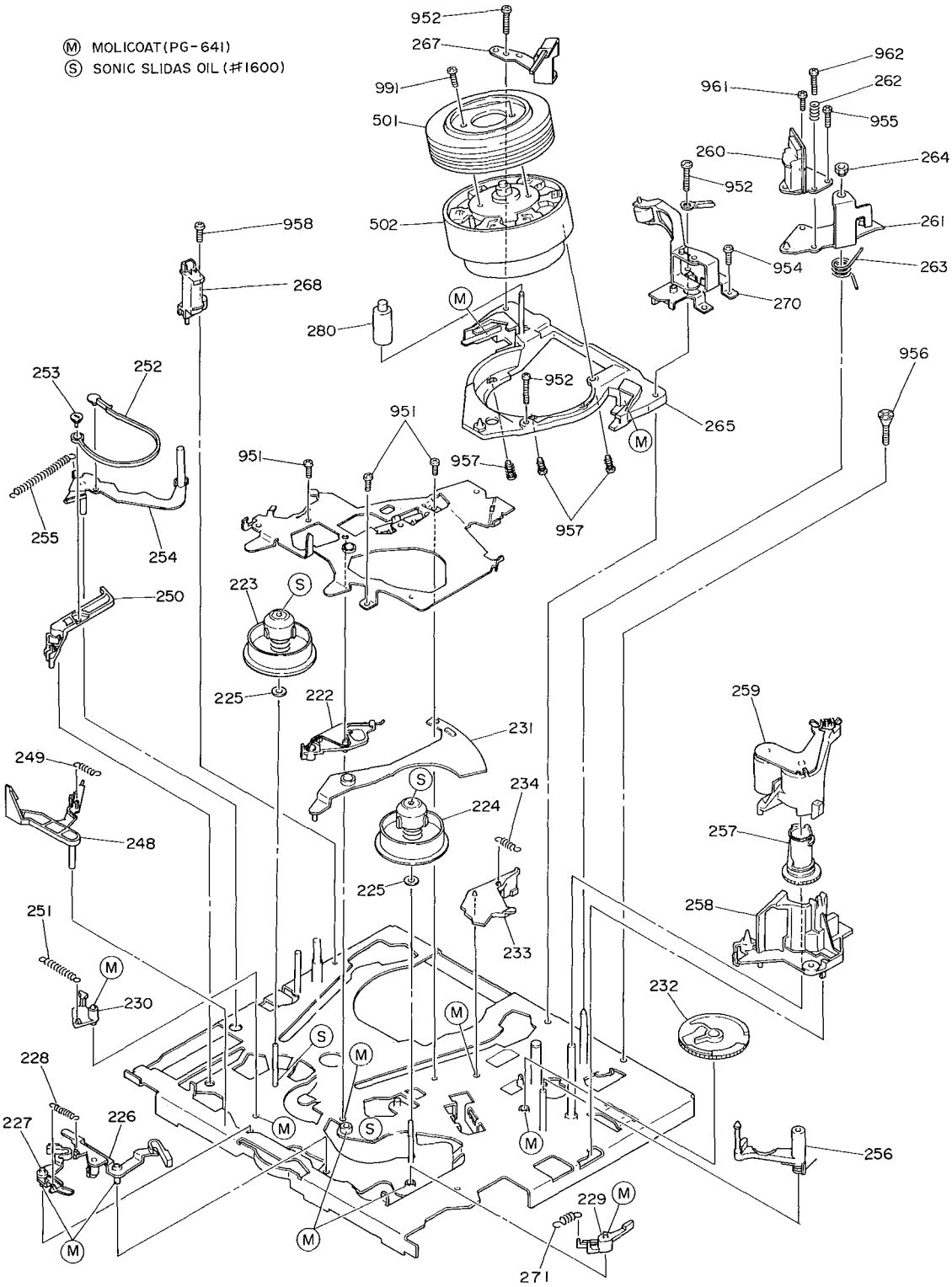


2. CABINET (CIRCUIT BOARDS) SECTION

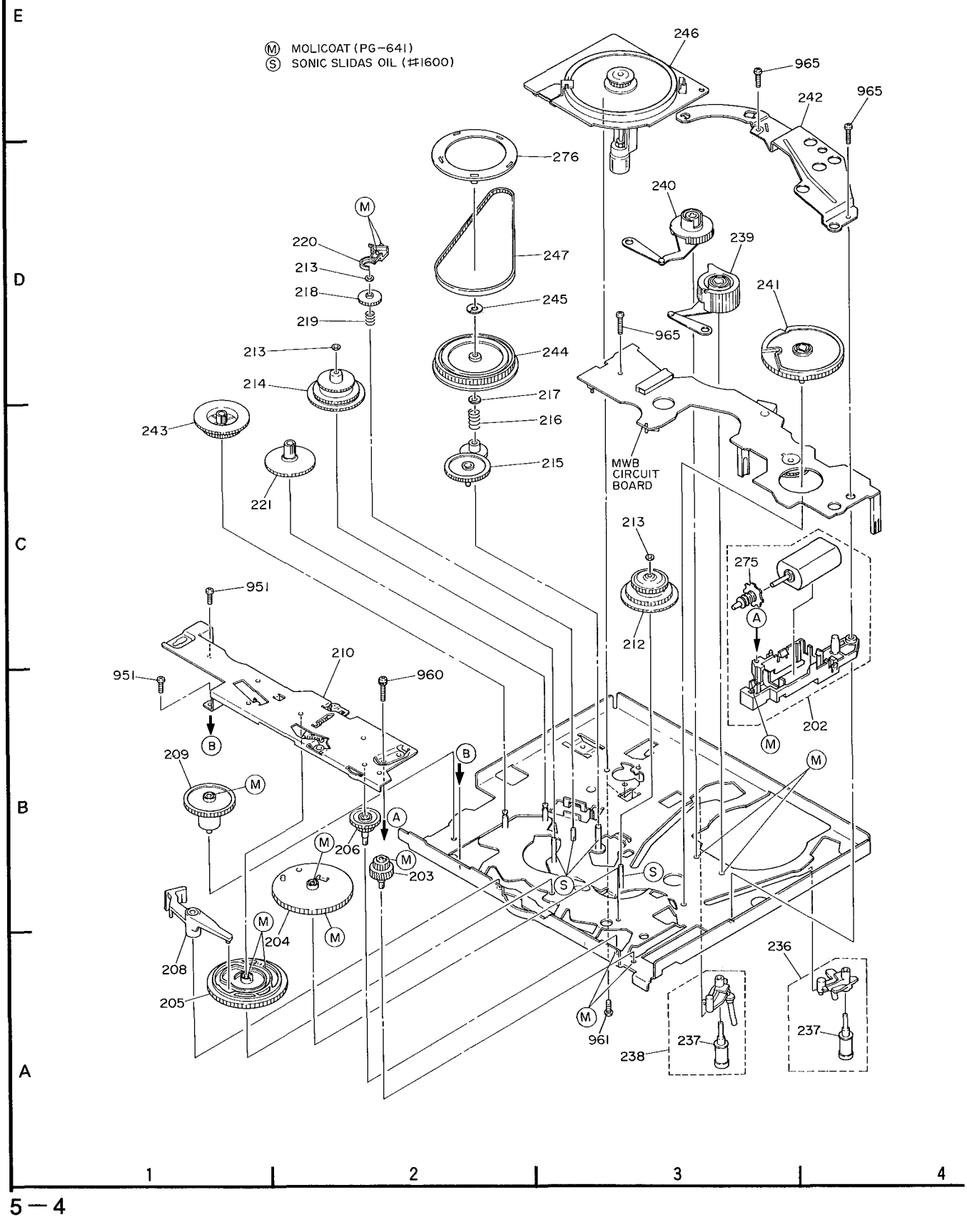
NOTE: The synthetic resin members that can be dismantled are shown by abbreviations using letters.



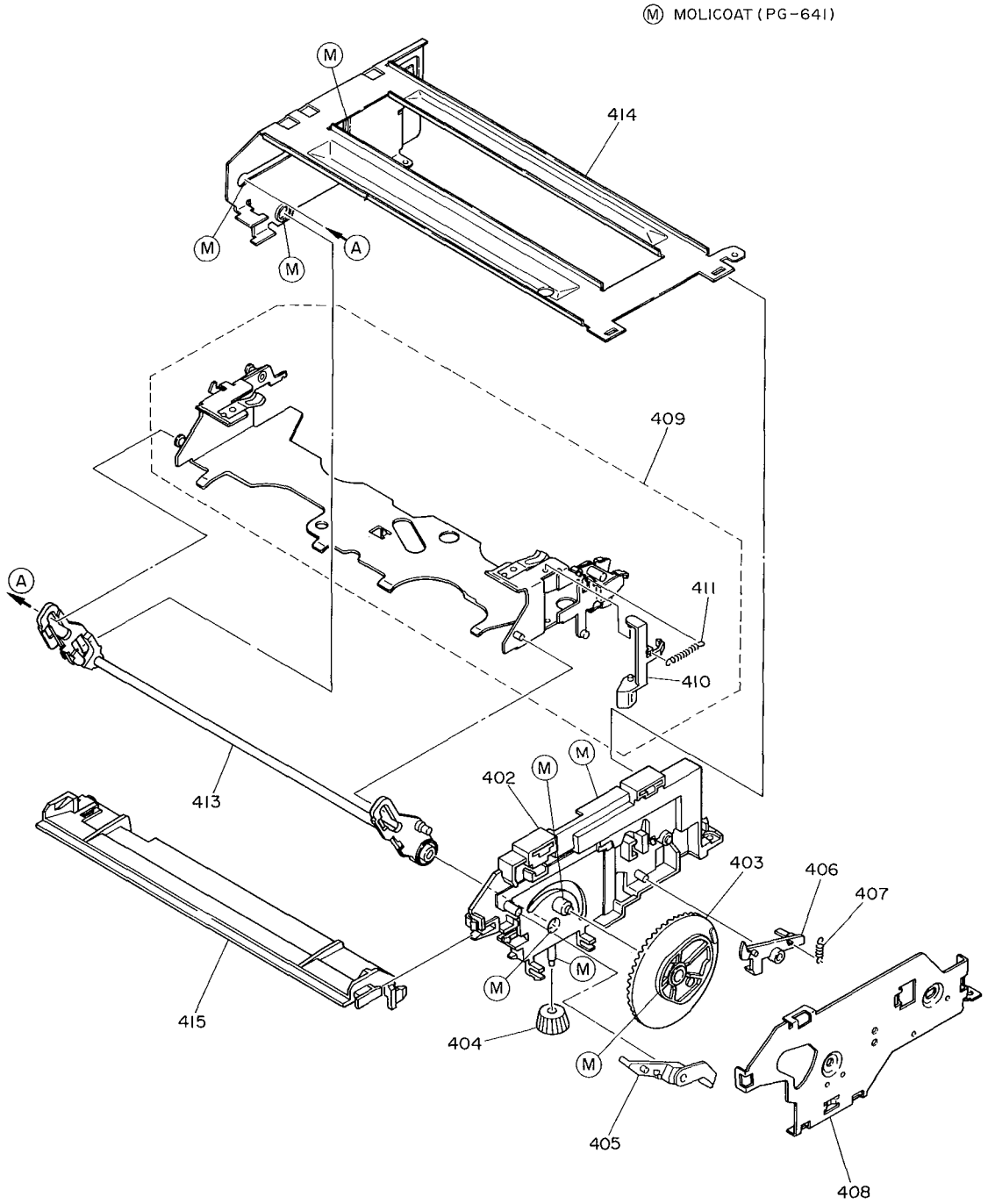
3. CHASSIS (TOP VIEW) SECTION



4. CHASSIS (BOTTOM VIEW) SECTION



5. CASSETTE LOADING MECHANISM SECTION



CHAPTER 6 REPLACEMENT PARTS LIST

1. MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM SECTION
101	QA10951	COVER, TOP
102	6008672	COVER, BOTTOM
104	PH14949	PANEL, FRONT
105	PH15242	DOOR, CONTROL
106	6811834	PIECE, REAR
108	7415793	BRACKET
109	4826831	SPRING
110	6529161	PLATE
113	4842811	PLATE
114	6812411	HOLDER
115	4330291	FELT
⚠116	5699151	AC INLET
119	5722411	HOLDER, FUSE
121	6898241	STUD
122	NA13861	PLATE, EARTH (R)
124	PC11412	KNOB, VOLUME
127	PH14825	PANEL, REAR
128	NA11361	BRACKET
143	6714211	NYLON RIVET - 3MMD
144	8815114	WASHER
202	6500761	MOTOR, LOADING
203	6441371	GEAR
204	6441392	GEAR
205	6406341	GEAR
206	6441381	GEAR
208	6823171	ARM, OPERATION
209	6441421	GEAR
210	6500321	PLATE
212	KF10271	GEAR, TAKE-UP
213	7788347	WASHER
214	6406291	GEAR(R)
215	6401446	ARM, FR
216	6522979	SPRING
217	6500841	WASHER
218	6441434	GEAR, CHANGE
219	6522978	SPRING
220	6823183	ARM
221	6441411	GEAR
222	6823314	ARM
223	6416632	REEL, TABLE(S)
224	6404141	REEL, TABLE(T)
225	4583333	WASHER
226	4589851	ARM, BRAKE(R)
227	6823229	ARM, BRAKE(L)
228	6318613	SPRING
229	6823272	BRAKE
230	6823261	BRAKE
231	4588971	ARM
232	6823251	GEAR
233	6823293	BRAKE
234	6558455	SPRING
236	6638943	BASE, GUIDE ROLLER(I)
237	KX12921	ROLLER, GUIDE
238	6638957	BASE, GUIDE ROLLER(O)
239	4587681	GEAR, LOADING(L)
240	4587671	GEAR, LOADING(R)
241	6823538	GEAR, MODE
242	KX10181	BRACKET
243	6823542	GEAR
244	6406332	PULLY, TAKE UP
245	6500841	WASHER
246	GP10205	MOTOR, CAPSTAN
247	6358101	BELT
248	6823424	ARM
249	6553361	SPRING
250	6823437	ARM, OPERATION
251	6553301	SPRING
252	6823475	BAND, TENSION
253	6823511	SHAFT
254	4587661	ARM
255	6553352	SPRING
256	6638936	ARM
257	6823521	GEAR, CAM
258	6823445	BRACKET
259	6500434	ROLLER, PRESSURE
260	5434153	HEAD
261	6500593	BASE, AC H6AD
262	6554301	SPRING
263	6553151	SPRING
264	7785673	NUT
265	6638895	BASE, CYLINDER
267	FU10191	BRUSH, CYLINDER
268	5423081	HEAD, FULL ERASE
270	NA10564	HEAD CLEANING ASSY
271	6558502	SPRING
275	6816211	WORM
276	6358591	CAP
280	6823452	ROLLER
402	6823613	BRACKET
403	6823621	GEAR
404	6823631	GEAR
405	6823642	ARM
406	6823652	ARM
407	6558531	SPRING
408	6500612	BRACKET
409	6500623	HOLDER
410	6823691	ARM
411	6558541	SPRING
413	6823665	ARM
414	6500672	BRACKET
415	6823701	HOLDER
501	HX10461	CYLINDER ASSY(CY-G4PP)
502	5436782	CYLINDER, LOWER (CY-G4PK)
902	8699408	SCREW
904	7781138	SCREW(3X10BT)
905	8671305	SCREW(2.6X5)
906	8699412	SCREW (3X12) BLACK
908	0711312	PAN HEAD SCREW - 2.6MMD X 12MM
910	7785351	SCREW(4XL4)
911	8691408	SXCREW(3X8)
912	8699410	SCREW(3X10)
913	8678410	DT BIND SCREW-3MMDX10MM
914	8698410	BT BIND SCREW-3MMDX10MM
915	8639408	SCREW(3X8)
951	0711304	SCREW(2.6X4)
952	0711312	PAN HEAD SCREW - 2.6MMD X 12MM
954	0711306	PAN HEAD SCREW-2.6MMDX6MM
955	7773741	SCREW
956	4528181	SCREW
957	8650408	SCREW
958	0671308	DT SCREW-2.6MMDX8MM
960	8650914	SCREW(2.6X14S)
961	8741306	SCREW(2.6X6)
962	8741312	SPRING
965	MJ10251	SCREW(M2.6)
991	7784131	SCREW (3X8)

2. ELECTRICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C0001	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0002	0209847	CERAMIC CHIP 82PF+-10% 50V
C0003	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0004	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0005	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0006	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0007	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0008	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C0009	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0010	0209847	CERAMIC CHIP 82PF+-10% 50V
C0011	0893058	CERAMIC CHIP 0.33UF+80-20% 16V
C0012	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0013	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0014	0800186	ELECTROLYTIC 47UF 16V
C0015	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0016	0209891	CERAMIC CHIP 12PF+-5% 50V
C0017	0800186	ELECTROLYTIC 47UF 16V
C0018	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0019	0209849	CERAMIC CHIP 390PF+-5% 50V
C0020	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0021	0800186	ELECTROLYTIC 47UF 16V
C0022	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0023	0800186	ELECTROLYTIC 47UF 16V
C201	0209895	CERAMIC CHIP 39PF+-5% 50V
C202	0800122	ELECTROLYTIC 10UF 16V
C203	0207458	ELECTROLYTIC 10UF 25V
C204	0800122	ELECTROLYTIC 10UF 16V
C205	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C206	0800047	ELECTROLYTIC 100UF 6.3V
C207	0207458	ELECTROLYTIC 10UF 25V
C208	0209880	CERAMIC CHIP 10PF+-0.5% 50V
C209	0209894	CERAMIC CHIP 27PF+-10% 50V
C210	0893032	CERAMIC CHIP 1200PF+-10% 50V
C211	0209895	CERAMIC CHIP 39PF+-5% 50V
C212	0209872	CERAMIC DISC 2PF+-0.25% 50V
C213	0207458	ELECTROLYTIC 10UF 25V
C215	0209896	CERAMIC CHIP 47PF+-5% 50V
C216	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C217	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C218	0800138	ELECTROLYTIC 47UF 6.3V
C219	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C220	0800138	ELECTROLYTIC 47UF 6.3V
C221	0800122	ELECTROLYTIC 10UF 16V
C223	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C224	0209893	CERAMIC CHIP 22PF+-10% 50V
C225	0209897	CERAMIC CHIP 56PF+-5% 50V
C226	0209848	CERAMIC DISC 150PF+-5% 50V
C227	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C229	0800138	ELECTROLYTIC 47UF 6.3V
C230	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C231	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C232	0800138	ELECTROLYTIC 47UF 6.3V
C233	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C234	0209894	CERAMIC CHIP 27PF+-10% 50V
C235	0209898	CERAMIC CHIP 100PF+-5% 50V
C236	0209853	CERAMIC DISC 68PF+-5% 50V
C237	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C238	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C239	0209894	CERAMIC CHIP 27PF+-10% 50V
C240	0207456	ELECTROLYTIC 1UF 50V
C241	0800117	ELECTROLYTIC 4.7UF 25V
C242	0800122	ELECTROLYTIC 10UF 16V
C244	0209893	CERAMIC CHIP 22PF+-10% 50V
C245	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C246	0800057	ELECTROLYTIC 220UF 10V
C248	0209903	CERAMIC CHIP 470PF+-5% 50V
C250	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C251	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C271	0209935	CERAMIC CHIP 27PF+-5% 50V
C290	0209933	CERAMIC CHIP 18PF+-5% 50V
C301	0800112	ELECTROLYTIC 2.2UF 50V
C302	0800112	ELECTROLYTIC 2.2UF 50V
C303	0800117	ELECTROLYTIC 4.7UF 25V
C304	0800109	ELECTROLYTIC 1.0UF 50V
C305	0209932	CERAMIC CHIP 15PF+-5% 50V
C306	0209921	CERAMIC CHIP 1PF+-0.25% 50V
C307	0893031	CERAMIC CHIP 1000PF+-10% 50V
C308	0800072	ELECTROLYTIC 470UF 6.3V
C309	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C310	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C311	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C312	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C313	0800138	ELECTROLYTIC 47UF 6.3V
C314	0209847	CERAMIC CHIP 82PF+-10% 50V
C315	0209906	CERAMIC DISC 820PF+-5% 50V
C316	0800105	ELECTROLYTIC 0.33UF 50V
C317	0880017	POLYESTER FILM 0.15UF+-10% 50V
C318	0209903	CERAMIC CHIP 470PF+-5% 50V
C319	0880017	POLYESTER FILM 0.15UF+-10% 50V
C320	0209847	CERAMIC CHIP 82PF+-10% 50V
C321	0800072	ELECTROLYTIC 470UF 6.3V
C322	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C323	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C324	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C325	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C326	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C327	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C328	0209898	CERAMIC CHIP 100PF+-5% 50V
C329	0880012	POLYESTER FILM 0.022UF+-10% 50V
C330	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C331	0209900	CERAMIC CHIP 270PF+-5% 50V
C332	0880012	POLYESTER FILM 0.022UF+-10% 50V
C333	0209903	CERAMIC CHIP 470PF+-5% 50V
C334	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C335	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C336	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C337	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C338	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C339	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C340	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C341	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C342	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C344	0209848	CERAMIC DISC 150PF+-5% 50V
C345	0209851	CERAMIC DISC 15PF+-5% 50V
C346	0880015	POLYESTER FILM 0.068UF+-10% 50V
C347	0800117	ELECTROLYTIC 4.7UF 25V
C348	0800122	ELECTROLYTIC 10UF 16V
C349	0800101	ELECTROLYTIC 0.1UF 50V
C351	0209794	CERAMIC CHIP 27PF+-5% 50V
C374	0890103	CERAMIC DISC 47000PF+80-20% 12V
C375	0890103	CERAMIC DISC 47000PF+80-20% 12V
C1202	0890026	CERAMIC DISC 220PF+-10% 50V
C1206	0800039	ELECTROLYTIC 47UF 10V
C1207	0880009	POLYESTER FILM 0.01UF+-10% 50V
C1208	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1351	0209948	CERAMIC CHIP 330PF+-5% 50V
C1352	0800001	ELECTROLYTIC 0.47UF 50V
C1353	0800015	ELECTROLYTIC 10UF 16V

SYMBOL-NO	P-NO	DESCRIPTION
C1354	0800005	ELECTROLYTIC 2.2UF 50V
C1355	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1356	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1357	0800326	ELECTROLYTIC 100UF 16V
C1358	0800073	ELECTROLYTIC 470UF 10V
C1359	0893015	CERAMIC CHIP 0.012UF+-10% 25V
C1360	0800103	ELECTROLYTIC 0.22UF 50V
C1361	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1362	0800038	ELECTROLYTIC 47UF 6.3V
C1363	0209950	CERAMIC CHIP 470PF+-5% 50V
C1364	0800047	ELECTROLYTIC 100UF 6.3V
C1365	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1366	0209950	CERAMIC CHIP 470PF+-5% 50V
C1367	0800101	ELECTROLYTIC 0.1UF 50V
C1368	0207457	ELECTROLYTIC 4.7UF 50V
C1369	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1370	0800064	ELECTROLYTIC 330UF 6.3V
C1371	0800015	ELECTROLYTIC 10UF 16V
C1372	0800015	ELECTROLYTIC 10UF 16V
C1373	0207458	ELECTROLYTIC 10UF 25V
C1374	0800001	ELECTROLYTIC 0.47UF 50V
C1377	0209932	CERAMIC CHIP 15PF+-5% 50V
C1378	0209931	CERAMIC CHIP 12PF+-5% 50V
C1379	0209935	CERAMIC CHIP 27PF+-5% 50V
C1402	0880012	POLYESTER FILM 0.022UF+-10% 50V
C1405	0800015	ELECTROLYTIC 10UF 16V
C1406	0800023	ELECTROLYITC 22UF 16V
C1407	0880008	POLYESTER FILM 6800PF+-10% 50V
C1410	0800015	ELECTROLYTIC 10UF 16V
C1411	0209942	CERAMIC CHIP 100PF+-5% 50V
C1412	0800109	ELECTROLYTIC 1.0UF 50V
C1413	0800109	ELECTROLYTIC 1.0UF 50V
C1414	0800003	ELECTROLYTIC 1UF 50V
C1415	0880012	POLYESTER FILM 0.022UF+-10% 50V
C1416	0800015	ELECTROLYTIC 10UF 16V
C1417	0800015	ELECTROLYTIC 10UF 16V
C1418	0880004	POLYESTER FILM 1500PF+-10% 50V
C1419	0800015	ELECTROLYTIC 10UF 16V
C1420	0800032	ELECTROLYTIC 33UF 16V
C1421	0893037	CERAMIC CHIP 3300PF+-10% 50V
C1422	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1423	0209946	CERAMIC CHIP 220PF+-5% 50V
C1424	0268449	MYLAR 0.047UF+-5% 100V
C1425	0800015	ELECTROLYTIC 10UF 16V
C1426	0202159	CERAMIC CHIP 680PF+-5% 50V
C1431	0880194	CAPACITOR 0.1UF+-5% 50V
C1432	0880014	POLYESTER FILM 0.047UF+-10% 50V
C1434	0800003	ELECTROLYTIC 1UF 50V
C1437	0880015	POLYESTER FILM 0.068UF+-10% 50V
C1439	0800009	ELECTROLYTIC 4.7UF 25V
C1440	0800015	ELECTROLYTIC 10UF 16V
C1441	0800049	ELECTROLYTIC 100UF 16V
C1442	0893063	CERAMIC CHIP 0.022UF+80-20% 25V
C1443	0800015	ELECTROLYTIC 10UF 16V
C1501	0209946	CERAMIC CHIP 220PF+-5% 50V
C1502	0209946	CERAMIC CHIP 220PF+-5% 50V
C1503	0209946	CERAMIC CHIP 220PF+-5% 50V
C1505	0209946	CERAMIC CHIP 220PF+-5% 50V
C1507	0209946	CERAMIC CHIP 220PF+-5% 50V
C1508	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1515	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1516	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1517	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C1518	0893087	CERAMIC CHIP 0.15UF+80-20% 50V
C1519	0893087	CERAMIC CHIP 0.15UF+80-20% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C1520	0893087	CERAMIC CHIP 0.15UF+80-20% 50V
C1531	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1532	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1601	0880046	POLYESTER FILM 0.015UF+-10% 50V
C1602	0800005	ELECTROLYTIC 2.2UF 50V
C1603	0207444	ELECTROLYTIC 1.0UF 50V
C1604	0880051	MYLAR 0.033UF+-10% 50V
C1605	0207453	ELECTROLYTIC 2.2UF 50V
C1606	0800117	ELECTROLYTIC 4.7UF 25V
C1608	0800005	ELECTROLYTIC 2.2UF 50V
C1609	0880019	POLYESTER FILM 0.33UF+-10% 50V
C1610	0880033	MYLAR 1500PF+-10% 50V
C1611	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1612	0800022	ELECTROLYTIC 22UF 10V
C1613	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1614	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1618	0890038	CERAMIC DISC 3300PF+-20% 16V
C1619	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C1620	0800032	ELECTROLYTIC 33UF 16V
C1622	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1623	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1624	0209944	CERAMIC CHIP 150PF+-5% 50V
C1625	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C1627	0209948	CERAMIC CHIP 330PF+-5% 50V
C1628	0209943	CERAMIC DISC 120PF+-5% 50V
C1629	0800015	ELECTROLYTIC 10UF 16V
C1630	0800015	ELECTROLYTIC 10UF 16V
C1631	0880055	MYLAR 0.068UF+-10% 50V
C1632	0202166	CERAMIC CHIP 820PF+-5% 50V
C1633	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1634	0800079	ELECTROLYTIC 1000UF 6.3V
C1635	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1642	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1643	0800126	ELECTROLYTIC 22UF 6.3V
C1644	0209893	CERAMIC CHIP 22PF+-10% 50V
C1645	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C1649	0800117	ELECTROLYTIC 4.7UF 25V
C1650	0207444	ELECTROLYTIC 1.0UF 50V
C1651	0207452	ELECTROLYTIC 22UF 10V
C1652	0209948	CERAMIC CHIP 330PF+-5% 50V
C1653	0880012	POLYESTER FILM 0.022UF+-10% 50V
C1654	0880003	POLYESTER FILM 1000PF+-10% 50V
C1655	0800003	ELECTROLYTIC 1UF 50V
C1656	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1657	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1658	0800003	ELECTROLYTIC 1UF 50V
C1659	0880057	POLYESTER FILM 0.1UF+-10% 50V
C1661	0890013	CERAMIC DISC 22PF+-5% 50V
C1670	0209898	CERAMIC CHIP 100PF+-5% 50V
C1701	0800373	ELECTROLYTIC 4700UF 6V
C1703	0880012	POLYESTER FILM 0.022UF+-10% 50V
C1704	0800015	ELECTROLYTIC 10UF 16V
C1706	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1707	0800039	ELECTROLYTIC 47UF 10V
C1708	0209931	CERAMIC CHIP 12PF+-5% 50V
C1709	0209936	CERAMIC CHIP 33PF+-5% 50V
C1710	0800039	ELECTROLYTIC 47UF 10V
C1711	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1712	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1713	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1714	0800039	ELECTROLYTIC 47UF 10V
C1715	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C1852	0800204	CERAMIC CHIP 100PF+-20% 25V
C1853	0800202	ELECTROLYTIC 10UF 25V
C1855	0890102	CERAMIC DISC 0.022UF+80-20% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C1856	AL10217F	ELECTROLYIC 1000UF 16V
C1857	0800203	ELECTROLYTIC 100UF 50V
C1858	0800204	CERAMIC CHIP 100PF+-20% 25V
C1859	0800204	CERAMIC CHIP 100PF+-20% 25V
C1867	0255786	ELECTROLYTIC 4700UF 35V
⚠C1891	AJ10294	CERAMIC CAPACITOR 4700PF+-20% 125V
C1902	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1903	0209942	CERAMIC CHIP 100PF+-5% 50V
C1905	0800003	ELECTROLYTIC 1UF 50V
C1906	0890035	CERAMIC DISC 1000PF+-10% 50V
C1907	0800032	ELECTROLYTIC 33UF 16V
C1909	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1910	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1911	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1913	0800033	ELECTROLYTIC 33UF 25V
C1914	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1916	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1917	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1918	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1919	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C1921	0217841	CERAMIC CHIP 1.0UF+-20% 10V
C1922	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1923	0800039	ELECTROLYTIC 47UF 10V
C1927	0800072	ELECTROLYTIC 470UF 6.3V
C1928	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1954	0893053	CERAMIC CHIP 0.047UF+-10% 50V
C2101	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C2851	0880014	POLYESTER FILM 0.047UF+-10% 50V
C2852	0207714	ELECTROLYTIC 100UF 63V
C2853	0207713	ELECTROLYTIC 22UF 63V
C2854	0800195	CERAMIC CHIP 1.0PF+-20% 50V
C2855	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C2856	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C2857	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C2858	0800201	ELECTROLYTIC 33UF 16V
C2859	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C2860	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C2861	0800202	ELECTROLYTIC 10UF 25V
C2865	0890022	CERAMIC DISC 100PF+-10% 50V
C2870	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C2872	0890045	CERAMIC DISC 0.047UF+80-20% 50V

RESISTORS

R0001	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0002	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R0003	0103825	CHIP RESISTOR 330HM+-5% 0.1W
R0004	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0005	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0006	0103825	CHIP RESISTOR 330HM+-5% 0.1W
R0007	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0008	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R0009	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R0010	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R0011	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R0012	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0013	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R0014	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0015	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R0016	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R0017	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0018	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R0019	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R0022	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R0023	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R201	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R202	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R203	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R204	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R205	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R206	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R207	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R208	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R209	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R210	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R211	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R212	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R213	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R214	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R215	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R217	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R218	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R219	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R220	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R222	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R223	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R224	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R225	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R226	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R227	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R228	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R231	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R232	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R254	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R255	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R256	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R258	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R260	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R263	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R290	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R301	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R302	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R303	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R304	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R305	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R306	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R307	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R308	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R309	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R310	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R311	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R312	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R313	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R314	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R315	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R316	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R317	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R318	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R319	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R320	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R321	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R322	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R323	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R324	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R325	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R326	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R327	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R328	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R329	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R330	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R331	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R332	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R333	0101764	RESISTOR 5.6KOHM+-1%1/8W
R334	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R335	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R336	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R337	0101734	METAL FILM 33 OHM 1/8W
R338	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R339	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R340	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R341	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R342	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R343	0101771	CHIP RESISTOR 39KOHM+-1% 1/8W
R344	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R346	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1201	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1202	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1203	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1204	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1206	0700064	CARBON FILM 56KOHM+-5% 1/8W
R1207	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1208	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1209	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1210	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1211	0101821	CARBON FILM 100 OHM+-5% 1/4W
R1212	0101821	CARBON FILM 100 OHM+-5% 1/4W
R1215	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1221	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1222	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1223	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1224	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1225	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1226	0700036	CARBON FILM 470 OHM+-5% 1/8W
R1227	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1228	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1229	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1230	0700074	CARBON FILM 330KOHM+-5% 1/8W
R1231	0700056	CARBON FILM 15KOHM+-5% 1/8W
R1232	0700068	CARBON FILM 120KOHM+-5% 1/8W
R1233	0700062	CARBON FILM 39KOHM+-5% 1/8W
R1234	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1235	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1236	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1237	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1238	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1239	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1240	0700036	CARBON FILM 470 OHM+-5% 1/8W
R1241	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1242	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1243	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1244	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1245	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1246	0700036	CARBON FILM 470 OHM+-5% 1/8W
R1247	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1248	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1249	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1250	0700074	CARBON FILM 330KOHM+-5% 1/8W
R1301	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1302	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1303	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1304	0700074	CARBON FILM 330KOHM+-5% 1/8W
R1305	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1306	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1307	0700043	CARBON FILM 1.5KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R1308	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1309	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1310	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1311	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1312	0700036	CARBON FILM 470 OHM+-5% 1/8W
R1313	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1314	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1315	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1316	0700074	CARBON FILM 330KOHM+-5% 1/8W
R1317	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R1318	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1351	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1352	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1353	0103829	CHIP RESISTOR 68 OHM+-5% 0.1W
R1354	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1355	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R1356	0104114	CHIP RESISTOR 3.3KOHM+-1% 0.1W
R1357	0104111	CHIP RESISTOR 10KOHM+-1% 1/10W
R1358	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1359	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R1360	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R1361	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1362	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R1363	0103878	CHIP RESISTOR 820KOHM+-5% 0.1W
R1364	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1365	0104111	CHIP RESISTOR 10KOHM+-1% 1/10W
R1366	0104278	CARBON FILM 120KOHM+-1% 1/10W
R1367	0104261	METAL FILM 2KOHM+-1% 1/10W
R1368	0104274	CHIP RESISTOR 1.5KOHM+-1% 1/10W
R1369	0104261	METAL FILM 2KOHM+-1% 1/10W
R1370	0104274	CHIP RESISTOR 1.5KOHM+-1% 1/10W
R1371	0101761	CHIP RESISTOR 2.7KOHM+-1% 1/8W
R1372	0105572	METAL FILM RESISTOR 2.7KOHM+-1% 1/10
R1373	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1375	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1376	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1377	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1379	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1380	0103881	CHIP RESISTOR 2.2MOHM+-10% 0.1W
R1381	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1382	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1385	0700027	CARBON FILM 100 OHM+-5% 1/8W
R1401	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1402	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1403	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R1406	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1407	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R1408	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1409	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R1410	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1411	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R1413	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R1415	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1416	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1417	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1418	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1419	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1420	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1421	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R1422	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R1423	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1424	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1425	0103834	CHIP RESISTOR 180 OHM+-5% 0.1W
R1426	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R1427	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R1428	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1429	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1430	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R1431	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R1432	0101725	CHIP RESISTOR 2.2 OHM+-5% 1/4W
R1433	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1434	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1435	0700038	CARBON FILM 680OHM+-5% 1/8W
R1436	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1439	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1441	0700059	CARBON FILM 27KOHM+-5% 1/8W
R1443	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1444	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1445	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R1446	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1447	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1505	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1506	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1507	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1508	0111276	METAL FILM 100 OHM+-5% 2W
R1512	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1513	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1514	0111276	METAL FILM 100 OHM+-5% 2W
R1517	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1521	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1522	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1523	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1524	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1525	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1527	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1528	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1529	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1531	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1545	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1546	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1601	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1602	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1603	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R1604	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1605	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R1606	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R1607	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1608	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1609	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1610	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R1611	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1612	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1613	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R1614	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R1615	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R1616	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1617	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R1618	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1619	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1620	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1622	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R1623	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1624	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1625	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1626	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1627	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1630	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1631	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R1632	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R1635	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R1636	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1637	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1638	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1639	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R1640	0103880	CHIP RESISTOR 1.5MOHM+-10% 0.1W
R1641	0103878	CHIP RESISTOR 820KOHM+-5% 0.1W
R1642	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1643	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1644	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1645	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1646	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1647	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1648	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1649	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1650	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R1651	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R1652	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R1654	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1655	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R1658	0101391	CARBON FILM 2.2MOHM+-5% 1/8W
R1663	0700082	RESISTOR 1.5MOHM+-5% 1/8W
R1664	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1665	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1666	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1667	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R1668	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1669	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1670	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1671	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1672	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1673	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1674	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1675	0700063	CARBON FILM 47KOHM+-5% 1/8W
R1676	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1677	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1678	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1679	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R1680	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R1681	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1682	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1683	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1684	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1685	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1686	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1687	AQ10217R	CHIP RESISTOR 390KOHM+-1% 1/10W
R1689	0105147	CHIP RESISTOR 100KOHM+-1% 1/10W
R1692	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R1694	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R1695	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R1696	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R1697	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1699	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1701	0103839	CHIP RESISTOR 470 OHM+-5% 0.1W
R1705	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1706	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1707	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1708	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1709	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1710	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1711	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1712	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1713	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1714	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1715	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1719	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R1720	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1722	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1723	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1724	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1726	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1728	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1729	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1730	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1732	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1733	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1734	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1735	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1736	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1737	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1738	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1739	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1740	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1741	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1742	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1743	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1744	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1749	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1750	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1754	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1755	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1758	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1780	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R1781	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R1782	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1783	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1786	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1787	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1788	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1789	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1790	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R1796	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R1851	0101844	CARBON FILM 8.2KOHM+-5% 1/4W
⚠R1871	0101712	FUSE RESISTOR 6.8 OHM+-5% 1/4W
R1884	0700036	CARBON FILM 470 OHM+-5% 1/8W
R1901	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1902	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1904	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1905	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1906	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1907	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R1908	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R1909	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1910	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1911	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R1912	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R1913	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1914	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1915	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1916	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1917	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1918	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1920	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1921	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1922	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1923	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1924	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1925	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1926	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1928	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1930	0700041	CARBON FILM 1.0KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R1934	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1935	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1936	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1937	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1938	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1940	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1941	0700031	CARBON FILM 180 OHM+-5% 1/8W
R1942	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1943	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1944	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1945	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1946	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1947	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1948	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R1949	0700034	CARBON FILM 330 OHM+-5% 1/8W
R1950	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1951	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1952	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1953	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1954	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1955	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1956	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1957	0103935	CHIP RESISTOR 1KOHM+-5%
R1958	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1959	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1960	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1961	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1966	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1969	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1970	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1975	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R1978	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1979	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1980	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1988	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1990	0101711	FUSE RESISTOR 2.2OHM+-5% 1/4W
R1993	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R1994	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1995	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1996	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1997	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R1998	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1999	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2851	0700074	CARBON FILM 330KOHM+-5% 1/8W
R2852	0700057	CARBON FILM 18KOHM+-5% 1/8W
R2859	0101756	CHIP RESISTOR 1KOHM+-1% 1/8W
R2860	1109024	METAL FILM 294 OHM+-1% 1/8W
R2868	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R2869	0101944	CARBON FILM 8.2KOHM+-5% 1/4W
R2870	0101944	CARBON FILM 8.2KOHM+-5% 1/4W
RT201	5006234	SEMI VARIABLE 1KOHM
RT301	5006236	SEMI VARIABLE 4.7KOHM
RT302	AW10138	SEMI VARIABLE RESISTOR 22KOHM
RT303	5006236	SEMI VARIABLE 4.7KOHM
RT304	5006238	SEMI VARIABLE 22KOHM
RT1301	5002082	VARIABLE 10KOHM
RT1302	5002082	VARIABLE 10KOHM
RT1303	5009136	VARIABLE RESISTOR
RT1304	5009136	VARIABLE RESISTOR
RT1351	AW10208R	SEMI VARIABLE 22KOHM+-25% 0.3W
RT1401	AW10209R	SEMI VARIABLE 47KOHM
RT1402	AW10207R	SEMI VARIABLE 10KOHM
RT1601	AW10212R	SEMI VARIABLE 220KOHM

SEMI-CONDUCTORS

SYMBOL-NO	P-NO	DESCRIPTION
D0001	5328301	DIODE MA151WK (MT)
D0002	5328301	DIODE MA151WK (MT)
D0004	5328301	DIODE MA151WK (MT)
D0005	5339131	DIODE 1SS254
D201	5339131	DIODE 1SS254
D202	5339131	DIODE 1SS254
D301	5339131	DIODE 1SS254
D1201	5339551	DIODE SS1J4
D1301	5339131	DIODE 1SS254
D1351	5339131	DIODE 1SS254
D1405	5328301	DIODE MA151WK (MT)
D1407	5339131	DIODE 1SS254
D1410	5339131	DIODE 1SS254
D1412	5339131	DIODE 1SS254
D1501	5339231	DIODE 1SR35-100A
D1502	5339231	DIODE 1SR35-100A
D1503	1330011	DIODE DINS4
D1601	5339131	DIODE 1SS254
D1604	5339131	DIODE 1SS254
D1605	5339131	DIODE 1SS254
D1606	5339131	DIODE 1SS254
D1607	5339231	DIODE 1SR35-100A
D1608	5339231	DIODE 1SR35-100A
D1609	5339131	DIODE 1SS254
D1610	5339131	DIODE 1SS254
D1613	5328301	DIODE MA151WK (MT)
D1614	5328301	DIODE MA151WK (MT)
D1619	1330011	DIODE DINS4
D1701	5339551	DIODE SS1J4
D1702	5339551	DIODE SS1J4
D1704	5339551	DIODE SS1J4
D1707	5339131	DIODE 1SS254
⚠D1851	5333351	DIODE D3SBA10
⚠D1852	5336371	DIODE RBA406B
D1856	5339231	DIODE 1SR35-100A
D1857	5339231	DIODE 1SR35-100A
D1901	5339551	DIODE SS1J4
D1918	5339131	DIODE 1SS254
D2101	5380933	LED GL451
D2851	5339171	DIODE 1SS130M
D2852	5339171	DIODE 1SS130M
D2853	5339171	DIODE 1SS130M
D2854	5339171	DIODE 1SS130M
IC201	1373542	IC HT7284A
IC202	5362263	IC MSM6965RS
IC206	1340041	IC HA118070
IC301	1351511	IC M52057FP
IC302	1373682	IC HT7323A
IC0001	1362321	IC HA118162NT
IC1201	1349041	IC UPD16312GB-3B4
IC1351	1362401	IC M52096SP
IC1352	1361448	IC UPD6450C-536
IC1353	1361932	IC BA7046A
IC1401	1347091	IC XRA7795LS
IC1402	5300641	IC BA7755
IC1601	CP10501	IC HD49791NT
IC1602	5350601	IC NJM4558D
IC1605	1361821	IC BA860
IC1606	5350601	IC NJM4558D
IC1607	5359901	IC UPD4066C
IC1608	5359901	IC UPD4066C
IC1609	1350792	IC TC4S66F
IC1610	1350792	IC TC4S66F
IC1612	1350792	IC TC4S66F

SYMBOL-NO	P-NO	DESCRIPTION
IC1613	1350792	IC TC4S66F
IC1701	CP11906	IC SC78014YCW-Y45
IC1702	CP10242	IC S-29255ADPG
IC1706	1340002	IC S-8053ALB
IC1901	CK15167	IC UPD75517GF-418-3B9
IC1902	CP10294	IC XLA6209-V3
IC1903	1340112	IC PST520C
IC1905	5364594	IC NJM2903D
IC2101	5327521	PHOTO TRANSISTOR SPI-315-C
IC2102	5327521	PHOTO TRANSISTOR SPI-315-C
IC2851	1361882	IC PQ30RV21
IC2852	1341956	IC M5278D09
Q0001	5328793	TRANSISTOR DTC144EK
Q0002	5328972	TRANSISTOR 2SC2412K-BRT
Q0003	5328972	TRANSISTOR 2SC2412K-BRT
Q0004	5328972	TRANSISTOR 2SC2412K-BRT
Q0005	5328793	TRANSISTOR DTC144EK
Q211	5328971	TRANSISTOR 2SC2412KBRST
Q212	5328971	TRANSISTOR 2SC2412KBRST
Q213	5328971	TRANSISTOR 2SC2412KBRST
Q214	5328971	TRANSISTOR 2SC2412KBRST
Q216	5328971	TRANSISTOR 2SC2412KBRST
Q217	5328971	TRANSISTOR 2SC2412KBRST
Q301	5328961	TRANSISTOR 2SA1037KERS
Q302	5328961	TRANSISTOR 2SA1037KERS
Q303	5328971	TRANSISTOR 2SC2412KBRST
Q311	5328971	TRANSISTOR 2SC2412KBRST
Q312	5328971	TRANSISTOR 2SC2412KBRST
Q314	5328971	TRANSISTOR 2SC2412KBRST
Q1351	5328961	TRANSISTOR 2SA1037KERS
Q1352	5328961	TRANSISTOR 2SA1037KERS
Q1353	5328972	TRANSISTOR 2SC2412K-BRT
Q1354	5328961	TRANSISTOR 2SA1037KERS
Q1355	5328793	TRANSISTOR DTC144EK
Q1356	5328793	TRANSISTOR DTC144EK
Q1357	5328793	TRANSISTOR DTC144EK
Q1401	5328793	TRANSISTOR DTC144EK
Q1402	5328795	TRANSISTOR DTA144EK-16
Q1403	5328793	TRANSISTOR DTC144EK
Q1409	5328793	TRANSISTOR DTC144EK
Q1410	5328795	TRANSISTOR DTA144EK-16
Q1411	1320004	TRANSISTOR 2SA854SQR
Q1412	5328972	TRANSISTOR 2SC2412K-BRT
Q1413	5323172	TRANSISTOR 2SC1214CD
Q1414	5328972	TRANSISTOR 2SC2412K-BRT
Q1416	5328793	TRANSISTOR DTC144EK
Q1417	5328793	TRANSISTOR DTC144EK
Q1419	5328795	TRANSISTOR DTA144EK-16
Q1420	5328793	TRANSISTOR DTC144EK
Q1422	5328791	TRANSISTOR DTC124K(25)
Q1424	5328793	TRANSISTOR DTC144EK
Q1425	5328793	TRANSISTOR DTC144EK
Q1504	5328793	TRANSISTOR DTC144EK
Q1505	5328793	TRANSISTOR DTC144EK
Q1506	5327031	TRANSISTOR 2SA673(C)
Q1510	5328793	TRANSISTOR DTC144EK
Q1511	5327031	TRANSISTOR 2SA673(C)
Q1514	5328793	TRANSISTOR DTC144EK
Q1518	5328793	TRANSISTOR DTC144EK
Q1519	5328793	TRANSISTOR DTC144EK
Q1520	5328793	TRANSISTOR DTC144EK
Q1521	5328793	TRANSISTOR DTC144EK
Q1522	5328793	TRANSISTOR DTC144EK
Q1603	5328972	TRANSISTOR 2SC2412K-BRT
Q1604	5328972	TRANSISTOR 2SC2412K-BRT

SYMBOL-NO	P-NO	DESCRIPTION
Q1605	5328972	TRANSISTOR 2SC2412K-BRT
Q1606	5328795	TRANSISTOR DTA144EK-16
Q1607	5328793	TRANSISTOR DTC144EK
Q1608	5328793	TRANSISTOR DTC144EK
Q1610	5328793	TRANSISTOR DTC144EK
Q1618	5328793	TRANSISTOR DTC144EK
Q1619	5328793	TRANSISTOR DTC144EK
Q1623	5328793	TRANSISTOR DTC144EK
Q1625	5328793	TRANSISTOR DTC144EK
Q1627	5328793	TRANSISTOR DTC144EK
Q1637	5328793	TRANSISTOR DTC144EK
Q1702	5328972	TRANSISTOR 2SC2412K-BRT
Q1851	CF10311	TRANSISTOR 2SD2398
Q1901	5328961	TRANSISTOR 2SA1037KERS
Q1902	5328961	TRANSISTOR 2SA1037KERS
Q1903	5328793	TRANSISTOR DTC144EK
Q1904	5328972	TRANSISTOR 2SC2412K-BRT
Q1905	5328793	TRANSISTOR DTC144EK
Q1906	5328795	TRANSISTOR DTA144EK-16
Q1913	5328792	TRANSISTOR DTA124K(15)
Q1914	5328793	TRANSISTOR DTC144EK
Q1919	5328793	TRANSISTOR DTC144EK
Q1923	5327261	TRANSISTOR 2SB1326(Q)
Q1924	5328791	TRANSISTOR DTC124K(25)
Q1925	5328793	TRANSISTOR DTC144EK
Q1931	5328793	TRANSISTOR DTC144EK
Q2101	5324661	PHOTO TRANSISTOR PT-483F1H
Q2102	5324661	PHOTO TRANSISTOR PT-483F1H
Q2851	5327032	TRANSISTOR 2SA673D
Q2863	CF10311	TRANSISTOR 2SD2398
QF1201	5721941	IC PROTECTOR
QF1901	5721941	IC PROTECTOR
QR202	5328793	TRANSISTOR DTC144EK
QR206	5328793	TRANSISTOR DTC144EK
QR207	5328793	TRANSISTOR DTC144EK
QR209	5328793	TRANSISTOR DTC144EK
QR305	5328793	TRANSISTOR DTC144EK
QR306	5328791	TRANSISTOR DTC124K(25)
QR307	5328793	TRANSISTOR DTC144EK
QR309	5328793	TRANSISTOR DTC144EK
ZD1202	5339262	DIODE HZS6-C2
ZD1351	5339272	DIODE HZS6-A3
ZD1352	5339272	DIODE HZS6-A3
ZD1353	5339272	DIODE HZS6-A3
ZD1354	5339272	DIODE HZS6-A3
ZD1601	5339282	DIODE HZS6-B2
ZD1602	5339296	DIODE HZS5B2
ZD1701	5339262	DIODE HZS6-C2
ZD1851	5339482	DIODE HZS15-2
ZD1901	5339478	DIODE HZS11C3
ZD1903	5339282	DIODE HZS6-B2
ZD2851	5339254	DIODE HZS30-1
ZD2858	5339274	DIODE HZS15-3
		TRANSFORMERS
T1401	5261533	TRANSFORMER
⚠T1852	5214535	TRANSFORMER,POWER
		COILS
L0001	5159154	CHOKE COIL 100UH
L0002	5159154	CHOKE COIL 100UH
L0003	0770057	CHOKE COIL 100UH+-5%
L0004	0770057	CHOKE COIL 100UH+-5%
L0005	0770057	CHOKE COIL 100UH+-5%
L0006	0770057	CHOKE COIL 100UH+-5%
L0007	5159146	CHOKE COIL 27UH
L201	5159149	CHOKE COIL 47UH
L202	5159086	CHOKE COIL
L203	5159145	CHOKE COIL 22UH
L204	5159151	CHOKE COIL 56UH
L205	5159144	CHOKE COIL 18UH
L207	5159147	CHOKE COIL 33UH
L208	0770057	CHOKE COIL 100UH+-5%
L209	0770057	CHOKE COIL 100UH+-5%
L210	5159146	CHOKE COIL 27UH
L212	0770057	CHOKE COIL 100UH+-5%
L214	0770057	CHOKE COIL 100UH+-5%
L215	5159141	CHOKE COIL 10UH
L216	0770057	CHOKE COIL 100UH+-5%
L218	0770057	CHOKE COIL 100UH+-5%
L290	5159148	CHOKE COIL 39UH
L301	5159149	CHOKE COIL 47UH
L302	0770057	CHOKE COIL 100UH+-5%
L304	5159148	CHOKE COIL 39UH
L305	5159154	CHOKE COIL 100UH
L306	5159143	COIL 15UH
L307	0770068	CHOKE COIL 680UH+-5%
L308	0770064	CHOKE COIL 330UH+-5%
L309	0770064	CHOKE COIL 330UH+-5%
L310	0770057	CHOKE COIL 100UH+-5%
L311	5159145	CHOKE COIL 22UH
L312	5159149	CHOKE COIL 47UH
L313	5159153	CHOKE COIL 82UH
L1351	0770062	CHOKE COIL 220UH+-5%
L1352	0770057	CHOKE COIL 100UH+-5%
L1353	0770057	CHOKE COIL 100UH+-5%
L1354	0770057	CHOKE COIL 100UH+-5%
L1355	0770052	COIL,CHOKE 39UH+-5%
L1401	0770057	CHOKE COIL 100UH+-5%
L1402	BH10201	COIL 33MH
L1601	0770057	CHOKE COIL 100UH+-5%
L1602	0770057	CHOKE COIL 100UH+-5%
L1851	5220381	FILTER
⚠L1852	5220381	FILTER
		CRYSTALS
X201	5778182	CRYSTAL
X301	5784552	CRYSTAL
X1301	5778462	CRYSTAL
X1701	BP10251	CRYSTAL
X1702	BP10421R	CRYSTAL
X1901	5779191	CRYSTAL
		MISCELLANEOUS
BA1101	FS10283	BATTERY
CN0001	5813916	MINI CONNECTOR
CN0002	5846303	CONNECTOR
CN0003	5846952	CONNECTOR
CN0004	5842522	CONNECTOR
CN0005	5846274	CONNECTOR
CN0006	5813733	MINI CONNECTOR
CN0007	5813767	CONNECTOR
CN0009	5846206	CONNECTOR
CN0010	EF10367	CONNECTOR
CN0015	1880362	CONNECTOR
CP201	5165331	FILTER,LOW PASS

SYMBOL-NO	P-NO	DESCRIPTION
CP202	5163533	FILTER
CP203	5163805	FILTER,LOW PASS
CP204	5165212	FILTER,LOW PASS
CP205	5162391	HIGH PASS FILTER
CP301	5163792	LC FILTER
CP302	5165051	FILTER
CP303	5785388	DELAY LINE
CP1351	5163372	FILTER
DG1201	DD10131	DISPLAY,FLOURESCENT
⚠FU1851	5721061	FUSE 1.6A
⚠FU1852	5720177	FUSE 2A
⚠FU1853	5720174	FUSE 630MA
PG0001	5655102	CONNECTOR
PG0002	5666569	MINI PLUG
PG0003	5666149	MINI PLUG
PG206	5668164	SOCKET
PG207	5668165	MINI PLUG
PG208	5668167	MINI PLUG
PG1103	5668178	MINI PLUG
PG1104	5668178	MINI PLUG
PG1200	5666563	MINI PLUG
PG1201	5665631	MINI PLUG
PG1202	5665631	MINI PLUG
PG1203	5669595	CONNECTOR
PG1303	5668168	MINI PLUG
PG1401	5666609	MINI PLUG
PG1502	5666569	MINI PLUG
PG1503	5666149	MINI PLUG
PG1521	5668184	MINI PLUG
PG1522	5668185	MINI PLUG
PG1524	5668187	MINI PLUG
PG1562	5666575	MINI PLUG
PG1581	5666145	MINI CONNECTOR
PG1582	5666151	MINI PLUG
PG1603	5666562	MINI PLUG
PG1608	5666567	MINI PLUG
PG1609	5666566	PLUG
PG1701	5665641	MINI PLUG
PG1702	5665641	MINI PLUG
PG1703	5668198	PLUG
PG1704	5668198	PLUG
PG1901	5662855	PLUG
PG2101	1830141	PLUG
PG2851	5666145	MINI CONNECTOR
PG2852	5666151	MINI PLUG
RJ1401	ER10181	JACK
S1201	5634884	SWITCH
S1202	5634884	SWITCH
S1203	5634884	SWITCH
S1204	5634884	SWITCH
S1205	5634884	SWITCH
S1206	5634884	SWITCH
S1207	5634884	SWITCH
S1208	5634884	SWITCH
S1212	5634884	SWITCH
S1213	5634884	SWITCH
S1214	5634884	SWITCH
S1215	5634884	SWITCH
S1216	5634884	SWITCH
S1217	5634884	SWITCH
S1301	5634884	SWITCH
S1302	5634884	SWITCH
S1303	5634884	SWITCH
S1304	5634884	SWITCH
S1305	5634884	SWITCH
S1306	5634884	SWITCH
S1307	5634884	SWITCH
S1308	5634884	SWITCH
S1309	5634884	SWITCH
S1310	5634884	SWITCH
S1311	5634884	SWITCH
S2101	5635631	SWITCH
S2102	5635331	SWITCH
S2104	5610891	SWITCH

CHAPTER 7 SCHEMATIC AND CIRCUIT BOARD DIAGRAMS

Applied Models: VT-L1500E

Cautions when using schematic diagrams

Caution for safety

The parts marked ⚠ are critical for safety. Be sure to use the specified parts to ensure safety when replacing them.

1. Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

〔Resistors〕

Item	Indication
Value	No indication ····· Ω K ····· k Ω M ····· M Ω
Tolerance	No indication ····· ± 5% (All tolerances other than ± 5% are indicated in the schematic diagrams)
Power capacitance	No indication ····· 1/8W (1/16W for leadless resistors without indication) All apacitances other than the above are indicated in the schematic diagrams.

〔Capacitors〕

Item	Indication
Value	No indication ····· μ F P ····· pF
Dielectric strength	No indication ····· 50V (All dielectric strengths other than 50V are indicated in the schematic diagrams.)

〔Coils〕

Item	Indication
Value	μ ····· μ H m ····· mH

2. Markings in schematic diagrams

1) Parts marked " ■ " with circuit numbers in the schematic diagrams are discrete parts.
2) Parts marked " ● " with circuit numbers in the schematic diagrams are leadless parts.

Cautions when using circuit board diagrams

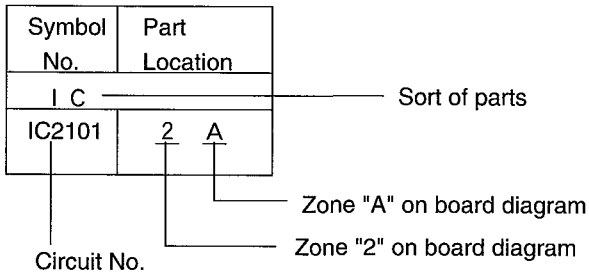
1. Identifications of sides A/B in circuit board diagrams

1) Board having a pattern on one side and parts on both sides.
   Side A: Shows discrete parts, viewed from the pattern side.
   Side B: Shows leadless parts, viewed from the pattern side.
2) Board having patterns on both sides and parts on both sides.
   Side A: Shows parts and patterns which can be seen when the case is opened.
   Side B: Shows parts and the pattern on the back of side A.

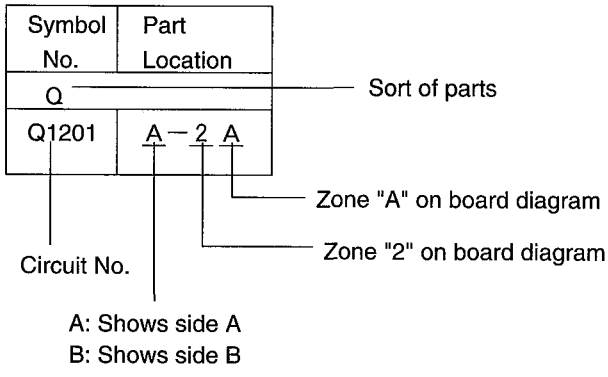
2. Table for indexing locations of parts

This table shows locations of each part on the circuit board diagrams. The locations are indicated using the guide scales on the external lines of diagrams.

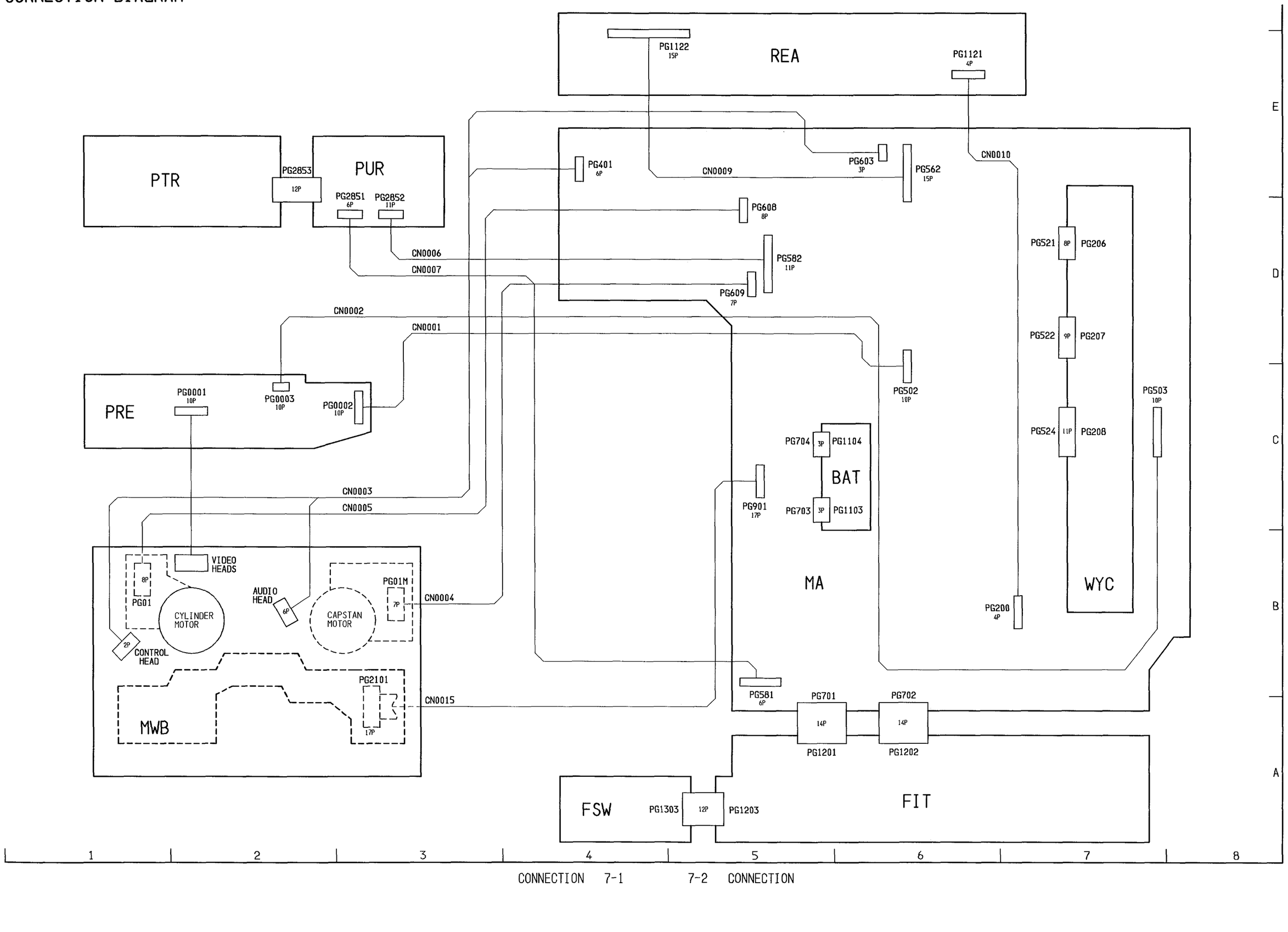
1) In case of one-layer board



2) In case of side A/B indication board



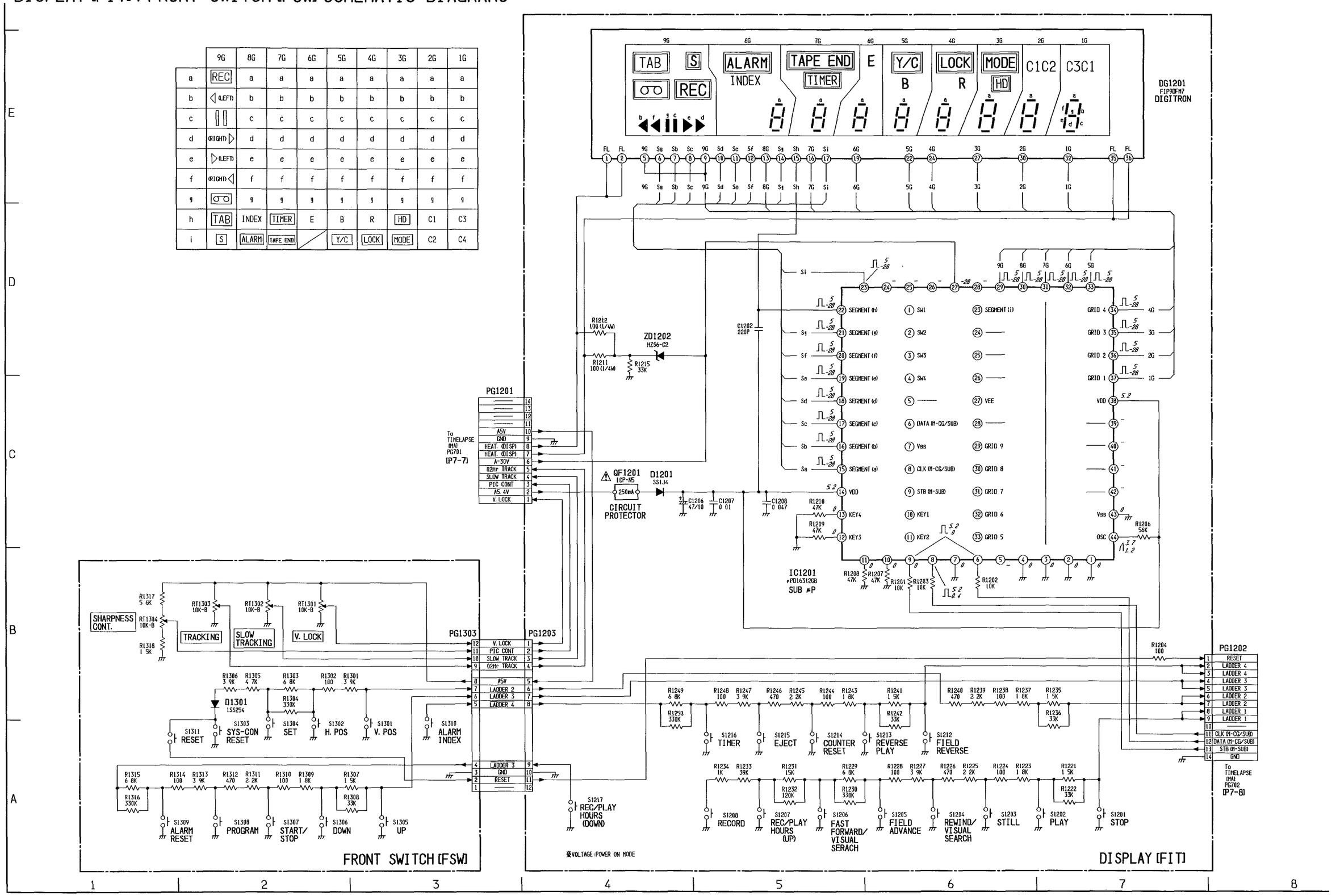
CONNECTION DIAGRAM



CONNECTION 7-1 7-2 CONNECTION

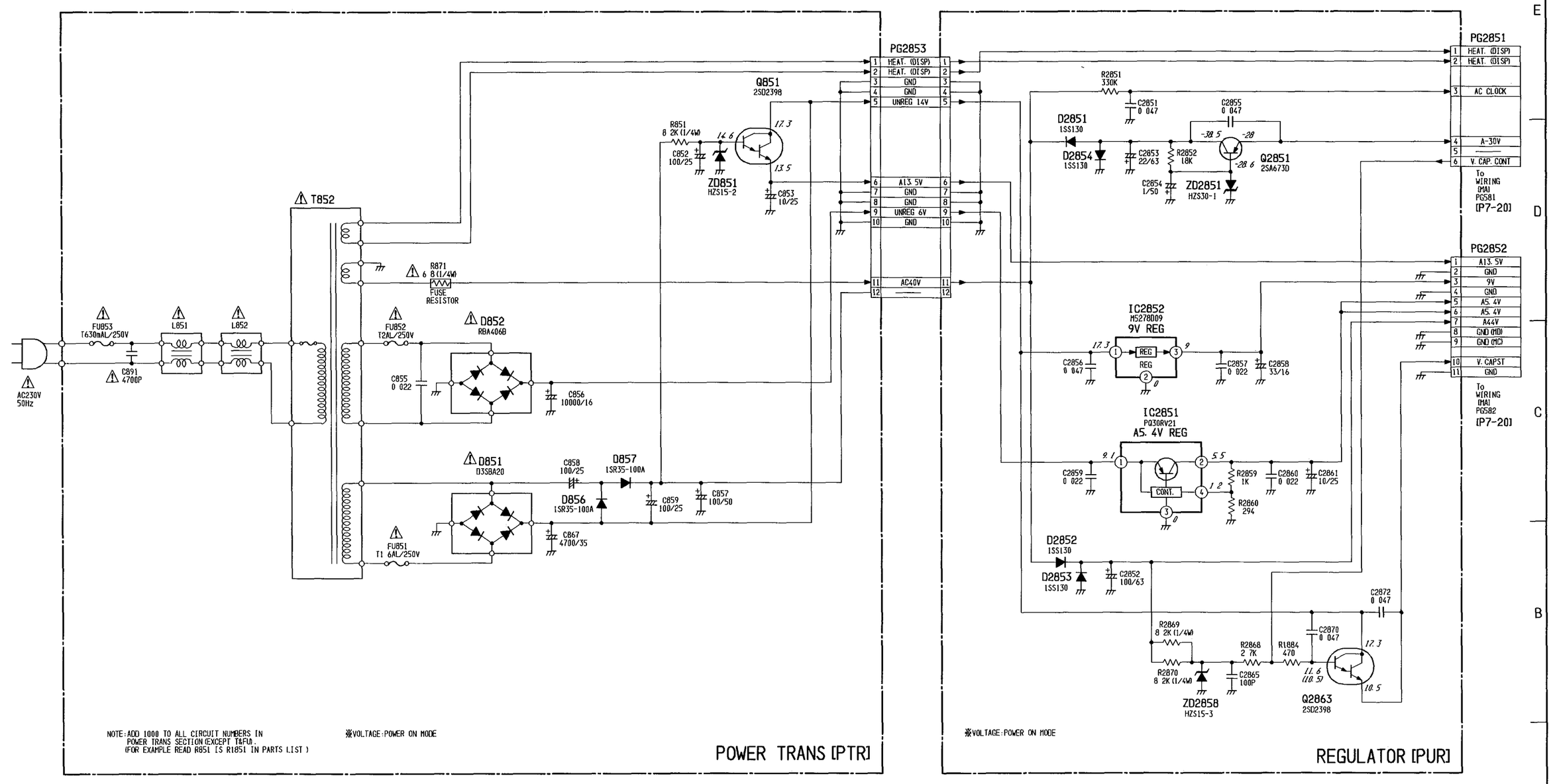
DISPLAY [FIT]. FRONT SWITCH [FSW] SCHEMATIC DIAGRAMS

	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	REC	a	a	a	a	a	a	a	a
b	◁ (LEFT)	b	b	b	b	b	b	b	b
c	▮▮	c	c	c	c	c	c	c	c
d	(RIGHT) ▷	d	d	d	d	d	d	d	d
e	▷ (LEFT)	e	e	e	e	e	e	e	e
f	(RIGHT) ◁	f	f	f	f	f	f	f	f
g	⊙⊙	g	g	g	g	g	g	g	g
h	TAB	INDEX	TIMER	E	B	R	HD	C1	C3
i	S	ALARM	TAPE END		Y/C	LOCK	MODE	C2	C4

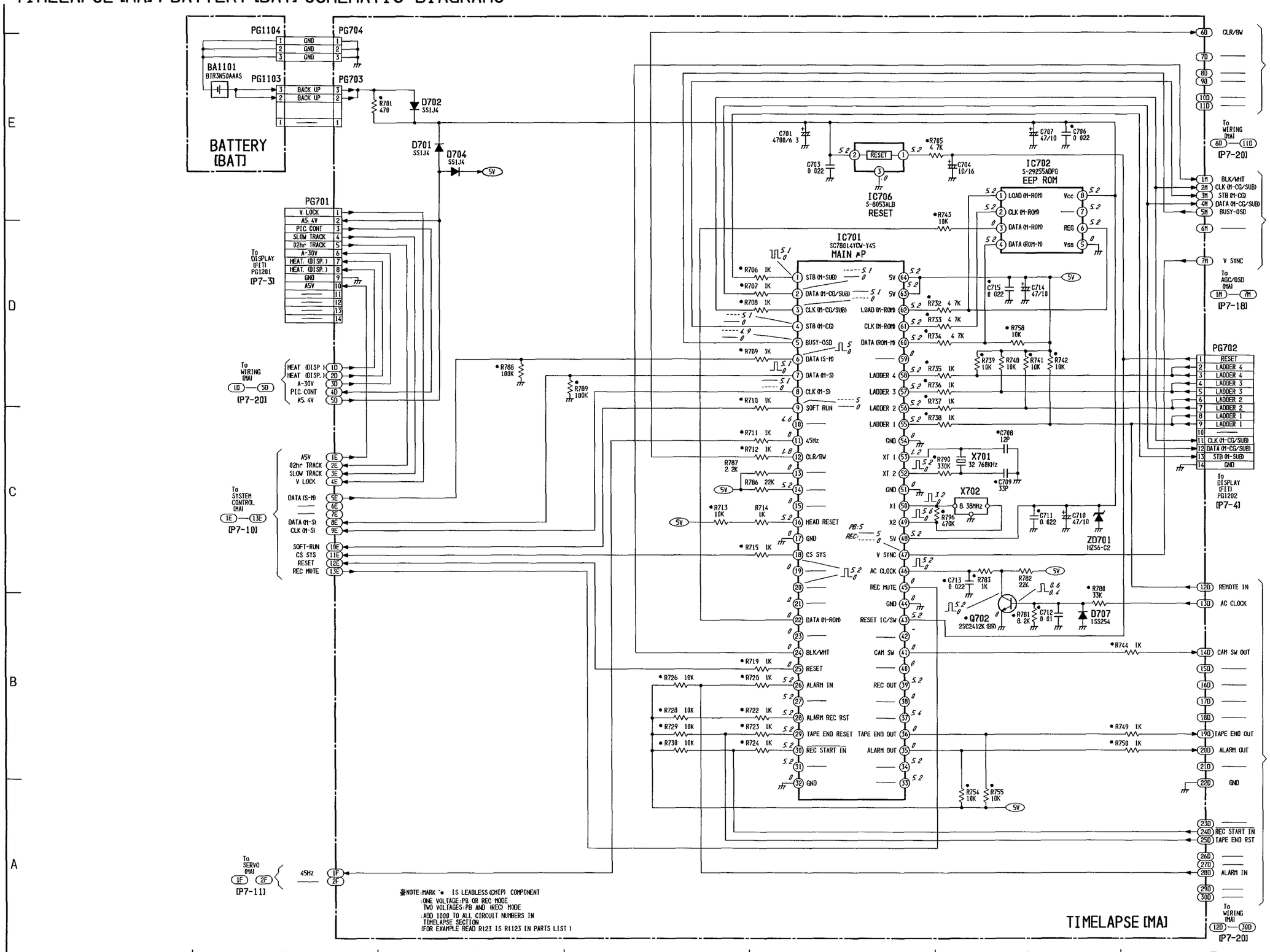


DISPLAY. FRONT SWITCH 7-3 7-4 DISPLAY

POWER TRANS [PTR] . REGULATOR [PUR] SCHEMATIC DIAGRAMS

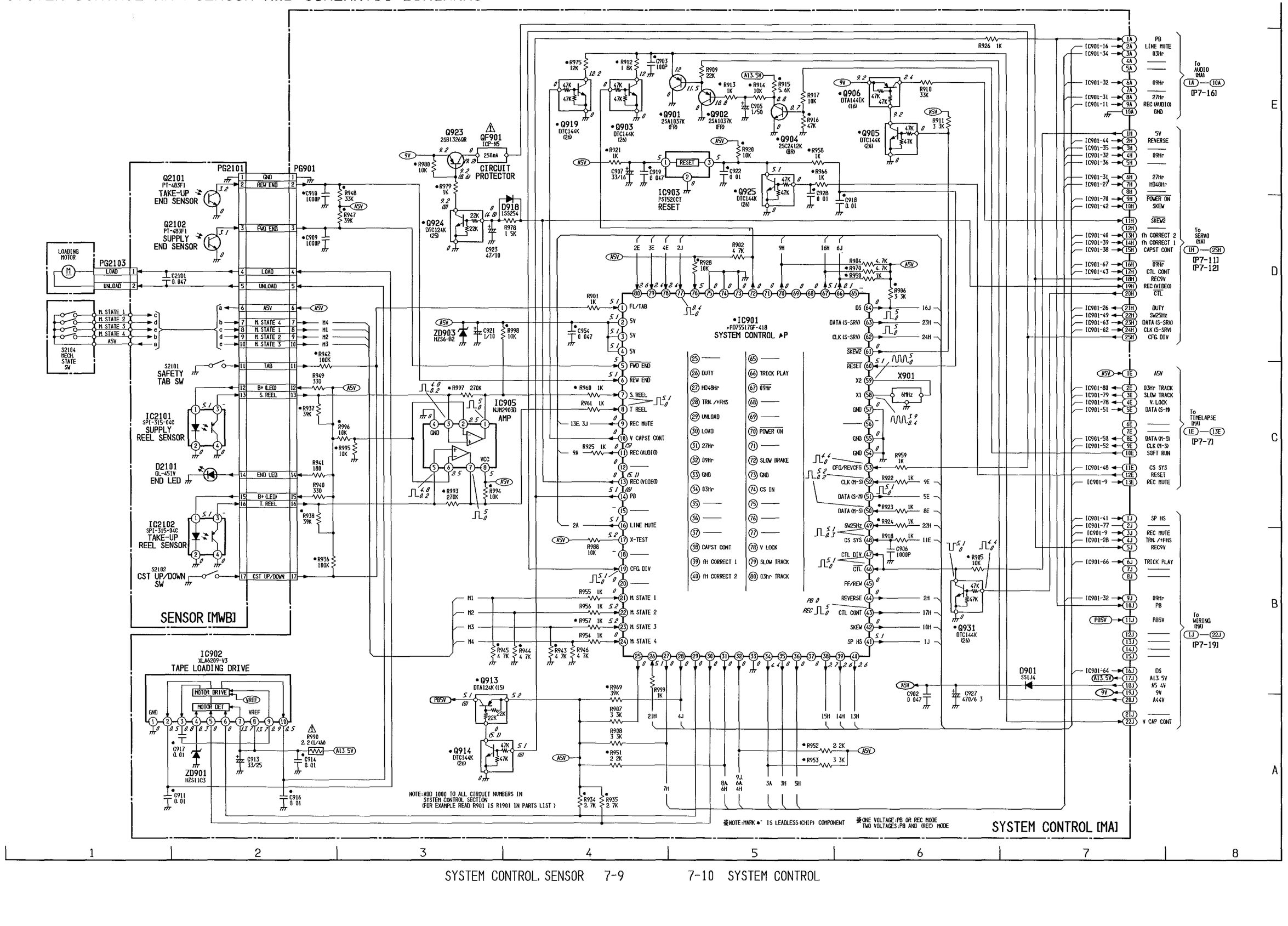


TIMELAPSE [MA] . BATTERY [BAT] SCHEMATIC DIAGRAMS



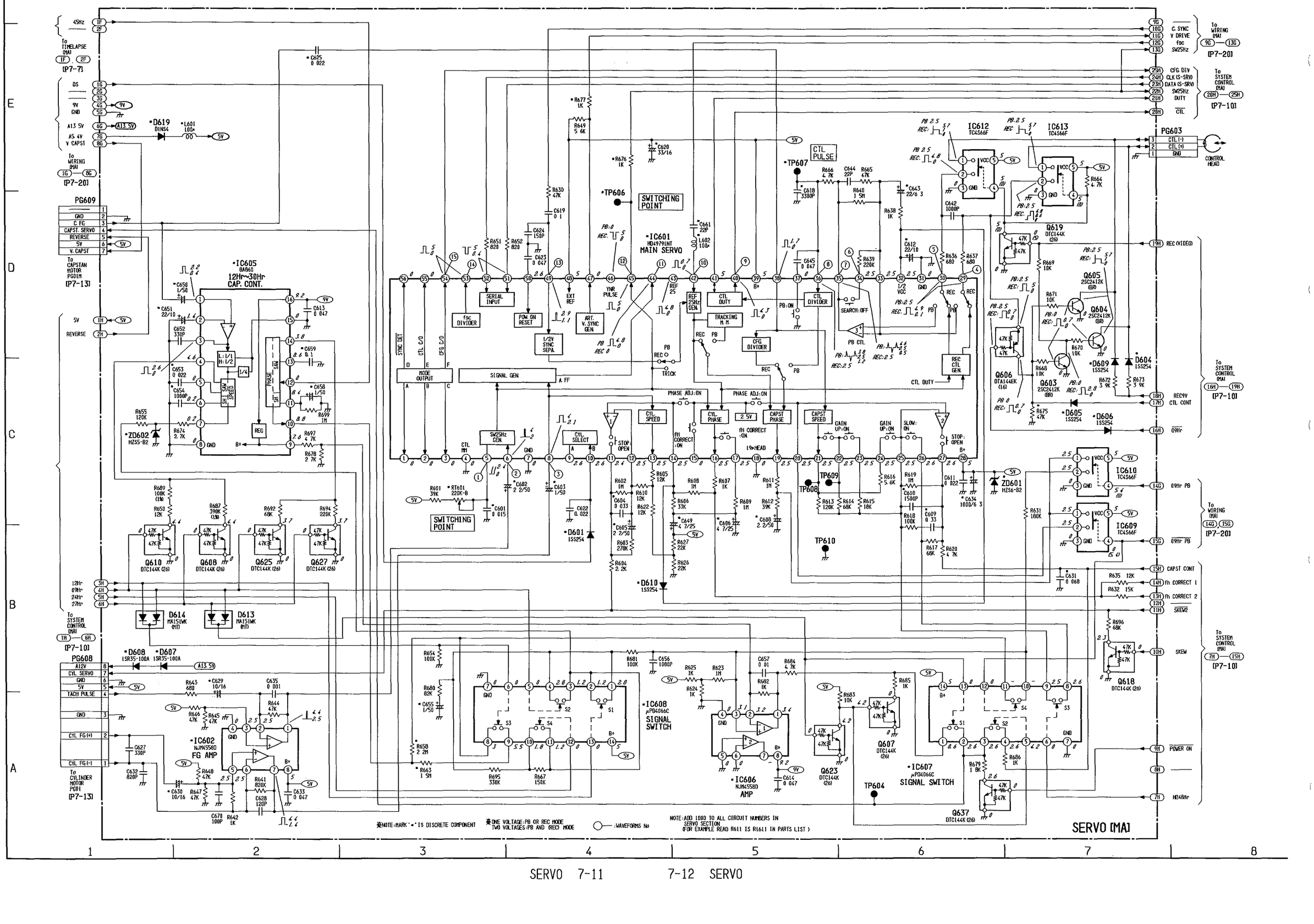
※NOTE: MARK "● IS LEADLESS (CHIP) COMPONENT
: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE
: ADD 1000 TO ALL CIRCUIT NUMBERS IN TIMELAPSE SECTION
(FOR EXAMPLE READ R123 IS R1123 IN PARTS LIST)

SYSTEM CONTROL [MA] . SENSOR [MWB] SCHEMATIC DIAGRAMS

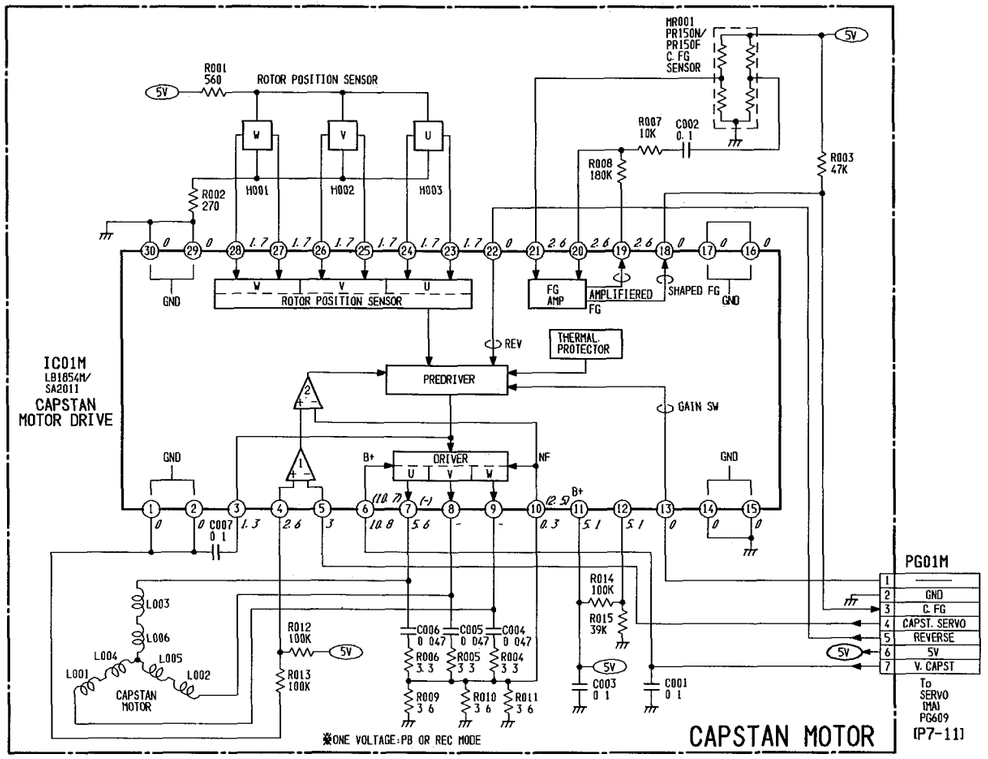


SYSTEM CONTROL, SENSOR 7-9 7-10 SYSTEM CONTROL

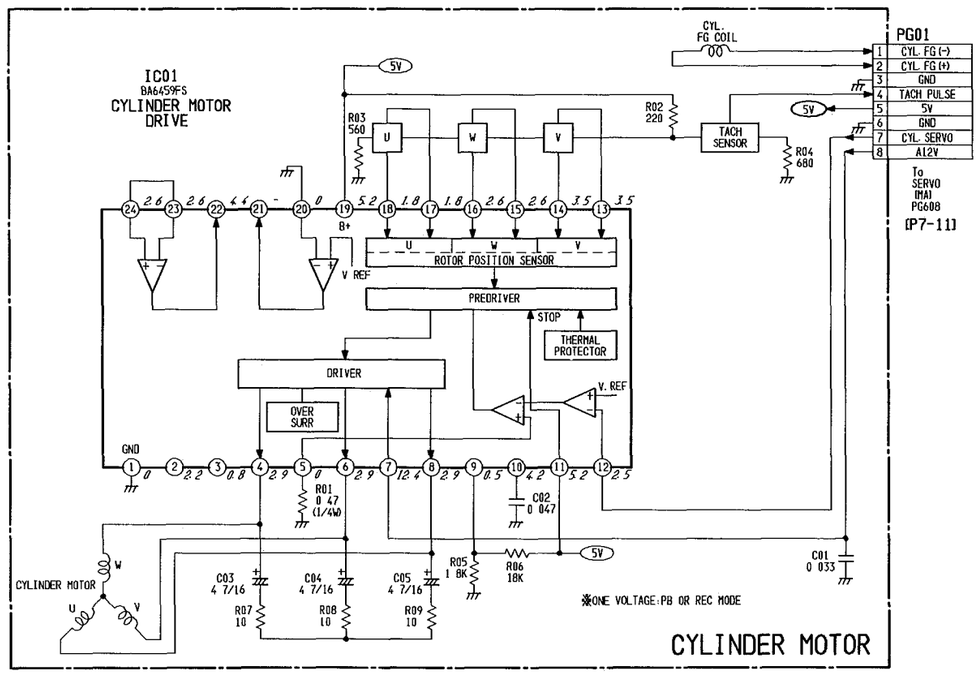
SERVO [MA] SCHEMATIC DIAGRAM



CAPSTAN MOTOR SCHEMATIC DIAGRAM



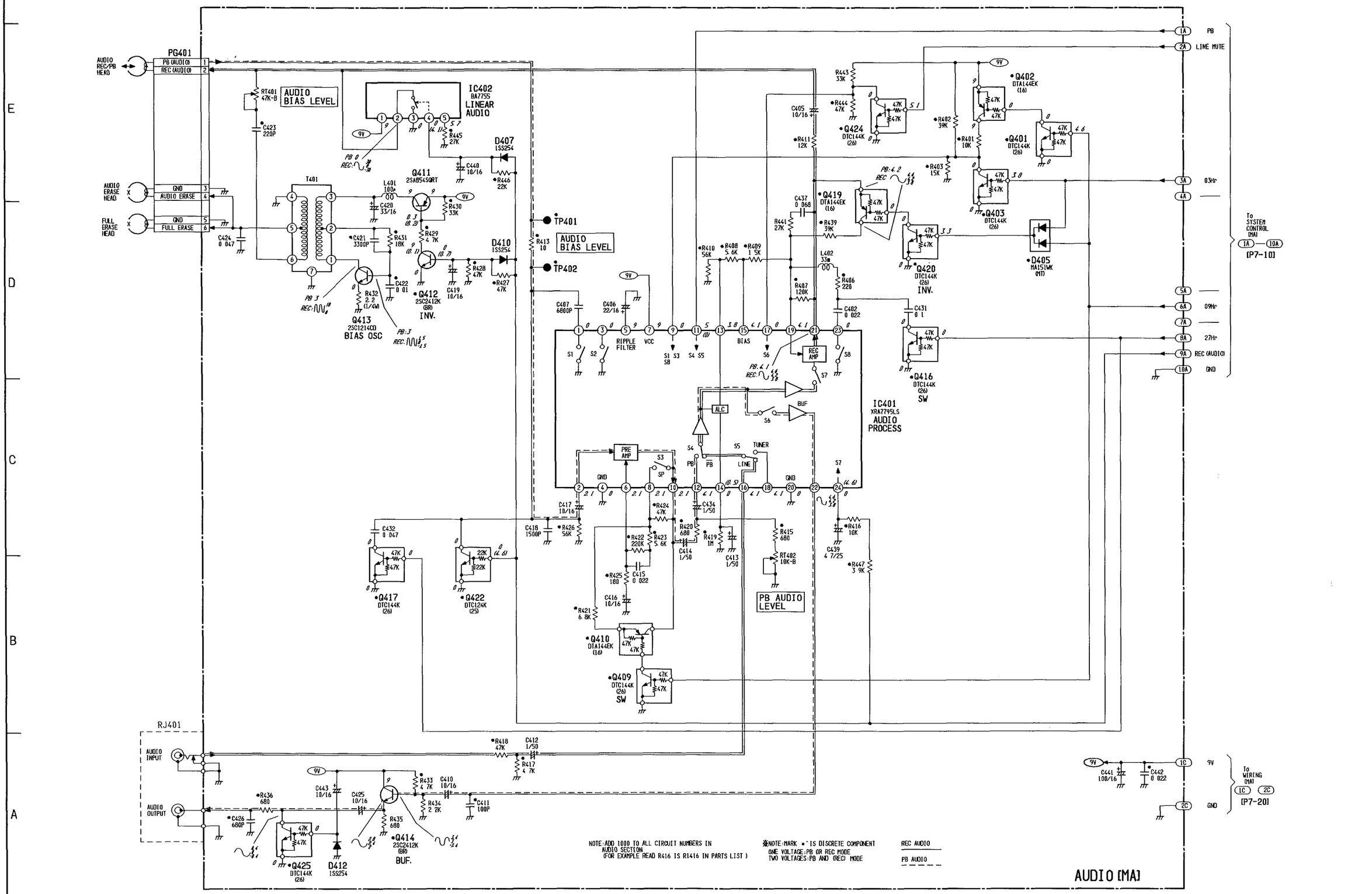
CYLINDER MOTOR SCHEMATIC DIAGRAM



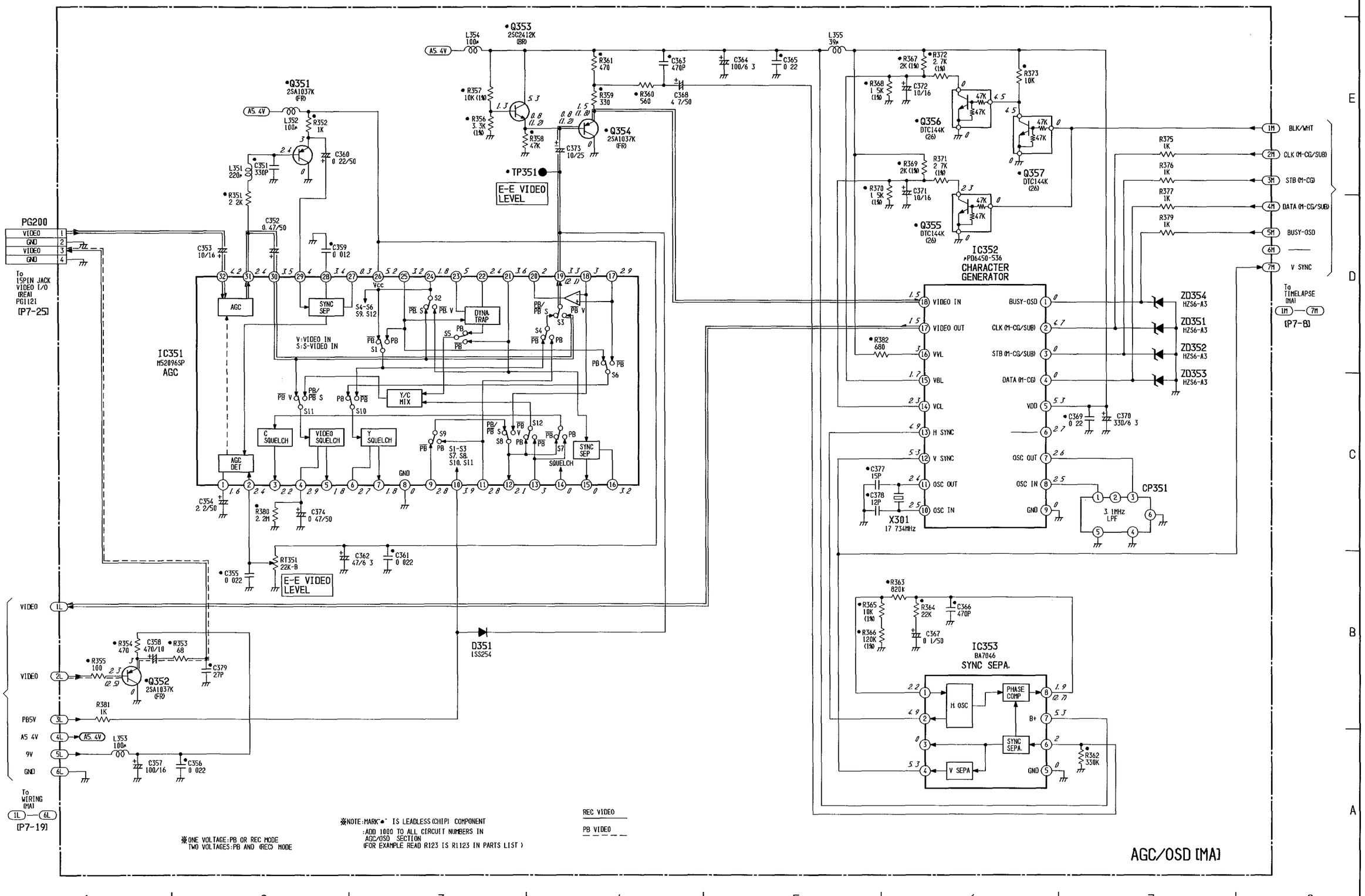
SERVO WAVEFORMS

1-A IC601-5 2.7Vp-p 0.5V/2.0msec. cm REC/PLAY	5-A IC601-30 5.9Vp-p 1V/10.0msec. cm REC	7-B IC601-35 2.4Vp-p 0.5V/5.0msec. cm PLAY	10-A IC601-42 520mVp-p 0.2V/5.0msec. cm REC/PLAY	13-A IC601-49 3.9Vp-p 1V/20.0msec. cm REC/PLAY
2-A IC601-6 2.3Vp-p 0.5V/10.0msec. cm REC/PLAY	6-A IC601-34 32mVp-p 20mV/20.0msec. cm REC	8-B IC601-36 2.4Vp-p 0.5V/5.0msec. cm PLAY	11-A IC601-44 27mVp-p 20mV/10.0msec. cm REC	14-A IC601-53 5.5Vp-p 1V/10.0msec. cm REC/PLAY
3-A IC601-8 3.4Vp-p 1V/1.0msec. cm REC/PLAY	6-B IC601-34 2.4Vp-p 0.5V/5.0msec. cm PLAY	9-A IC601-40 5.4Vp-p 1V/10.0msec. cm REC	11-B IC601-44 5.6Vp-p 1V/10.0msec. cm PLAY	15-A IC601-54 5.5Vp-p 1V/100msec. cm REC/PLAY
4-A IC601-29 5.9Vp-p 1V/10.0msec. cm REC	7-A IC601-35 34mVp-p 20mV/20.0msec. cm REC	9-B IC601-40 5.4Vp-p 1V/10.0msec. cm PLAY	12-A IC601-45 5.6Vp-p 1V/10.0msec. cm REC/PLAY	

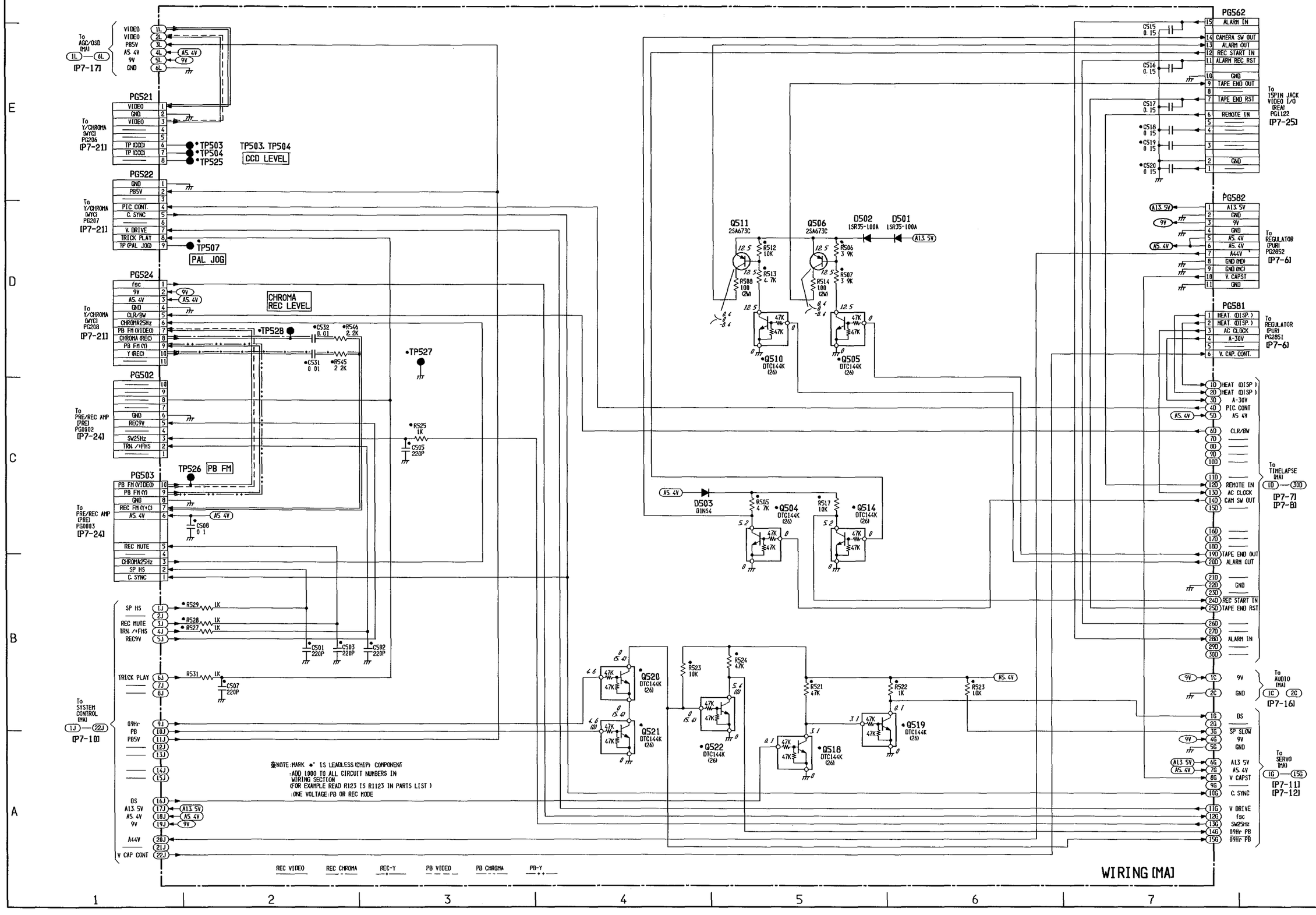
AUDIO [MA] SCHEMATIC DIAGRAM



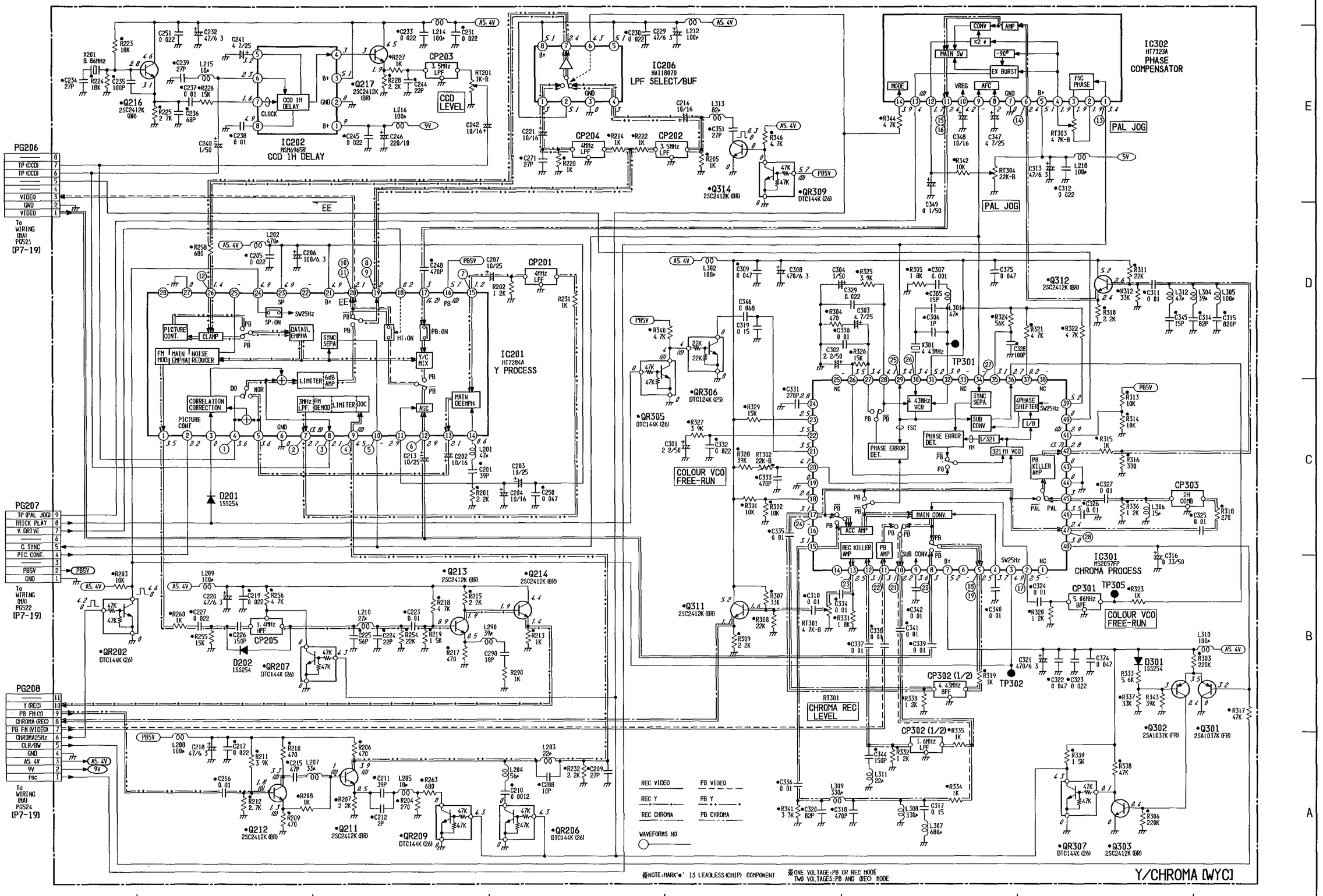
AGC/OSD [MA] SCHEMATIC DIAGRAM



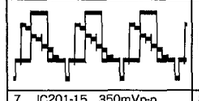
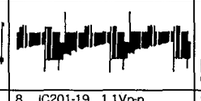
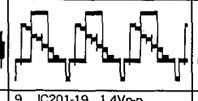
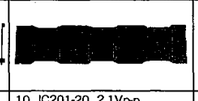
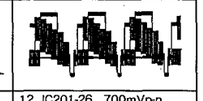
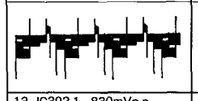
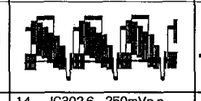
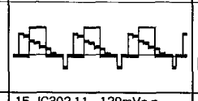
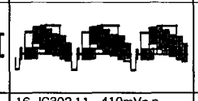
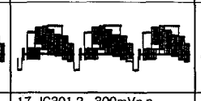
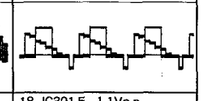
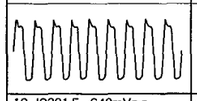
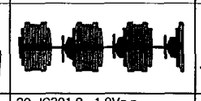
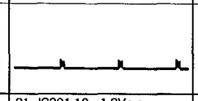
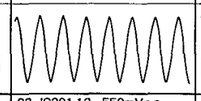
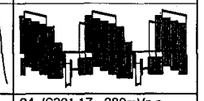
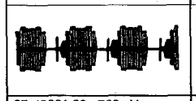
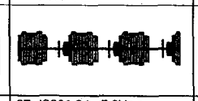
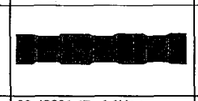
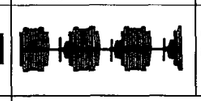
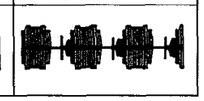
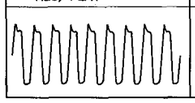
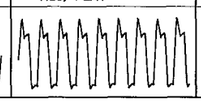
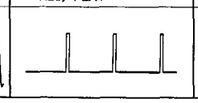
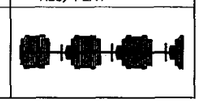
WIRING [MA] SCHEMATIC DIAGRAM



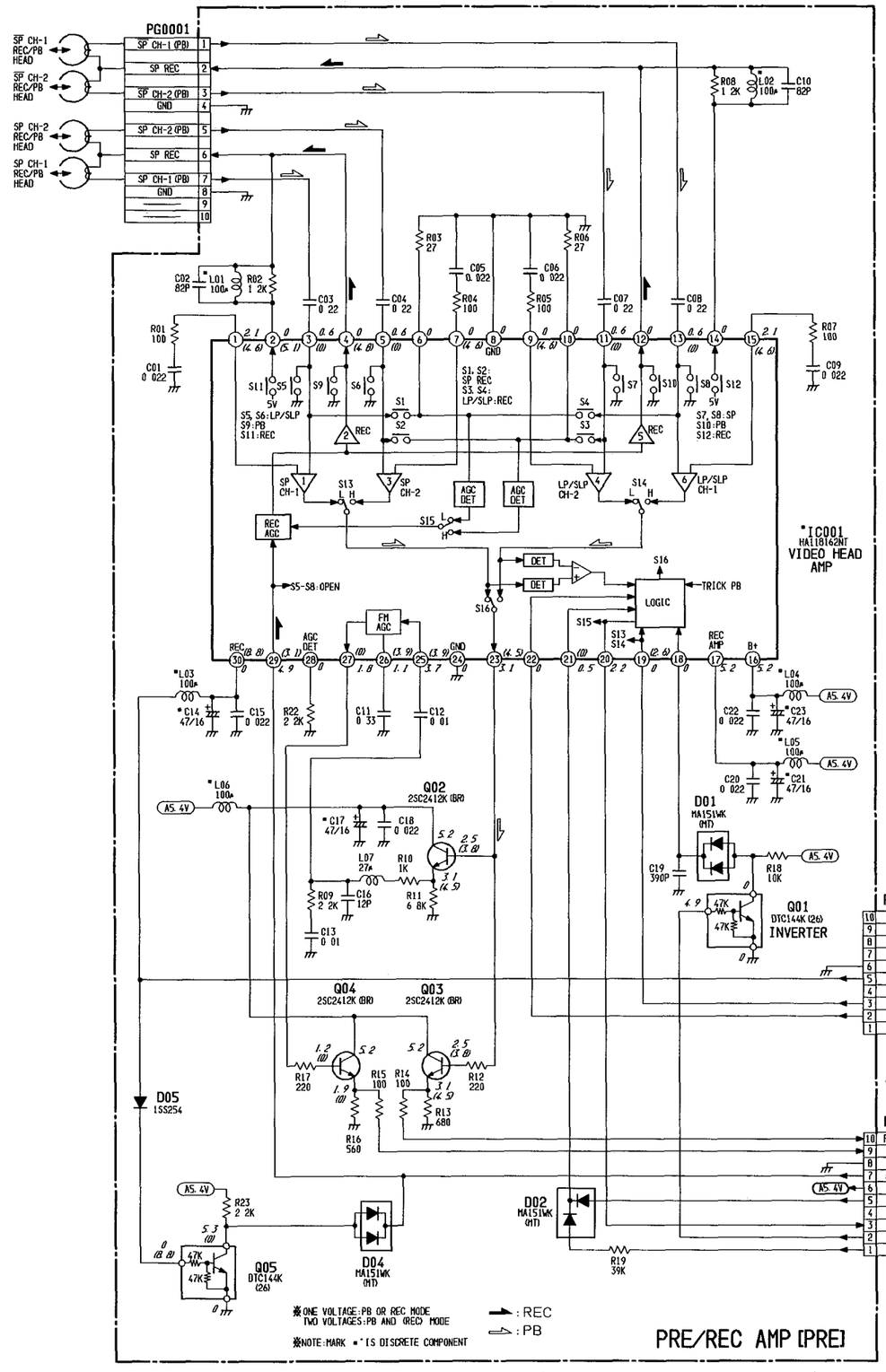
Y/CHROMA [WYC] SCHEMATIC DIAGRAM



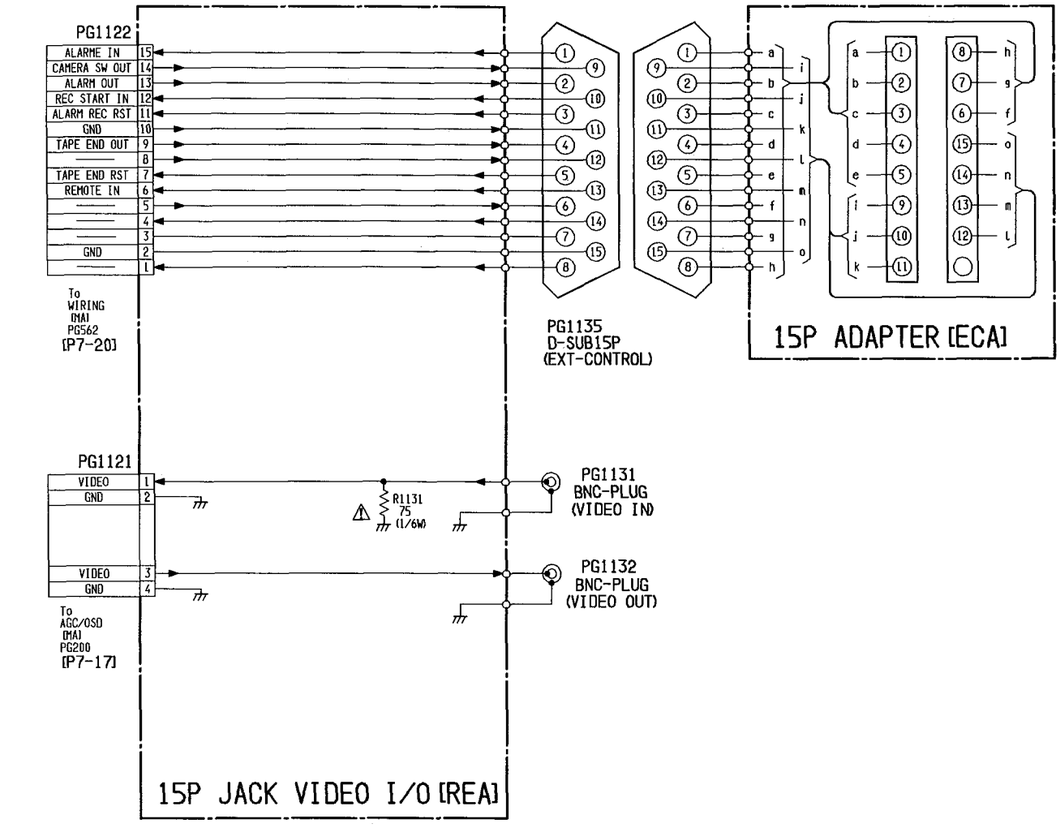
Y/CHROMA WAVEFORMS

1 IC201-4 550mVp-p 0.2V/20.0 μ sec cm PLAY	2 IC201-7 830mVp-p 0.2V/20.0 μ sec cm PLAY	3 IC201-8 570mVp-p 0.2V/20.0 μ sec cm PLAY	4 IC201-9 450mVp-p 0.2V/20.0 μ sec cm PLAY	5 IC201-10 4.9Vp-p 1V/20.0 μ sec cm REC/PLAY	6 IC201-12 1.0Vp-p 0.2V/20.0 μ sec cm REC
					
7 IC201-15 350mVp-p 0.1V/20.0 μ sec cm PLAY	8 IC201-19 1.1Vp-p 0.2V/20.0 μ sec cm REC	9 IC201-19 1.4Vp-p 0.5V/20.0 μ sec cm PLAY	10 IC201-20 2.1Vp-p 0.5V/20.0 μ sec cm REC	11 IC201-20 2.2Vp-p 0.5V/20.0 μ sec cm PLAY	12 IC201-26 700mVp-p 0.2V/20.0 μ sec cm REC/PLAY
					
13 IC302-1 830mVp-p 0.2V/200nsec cm REC/PLAY	14 IC302-6 250mVp-p 0.1V/20.0 μ sec cm PLAY	15 IC302-11 120mVp-p 0.1V/20.0 μ sec cm REC	16 IC302-11 410mVp-p 0.1V/20.0 μ sec cm PLAY	17 IC301-2 300mVp-p 0.1V/200nsec cm REC/PLAY	18 IC301-5 1.1Vp-p 0.2V/20.0 μ sec cm REC
					
19 IC301-5 640mVp-p 0.2V/20.0 μ sec cm PLAY	20 IC301-8 1.0Vp-p 0.2V/20.0 μ sec cm REC	21 IC301-10 1.2Vp-p 0.5V/20.0 μ sec cm REC/PLAY	22 IC301-11 490mVp-p 0.2V/20.0 μ sec cm PLAY	23 IC301-13 550mVp-p 0.2V/20.0 μ sec cm REC	24 IC301-17 280mVp-p 0.1V/20.0 μ sec cm REC/PLAY
					
25 IC301-29 790mVp-p 0.2V/200nsec cm REC/PLAY	26 IC301-30 1.0Vp-p 0.2V/200nsec cm REC/PLAY	27 IC301-34 5.0Vp-p 2V/20.0 μ sec cm REC/PLAY	28 IC301-47 1.1Vp-p 0.5V/28.1 μ sec cm REC/PLAY		
					

PRE/REC AMP [PRE] SCHEMATIC DIAGRAM



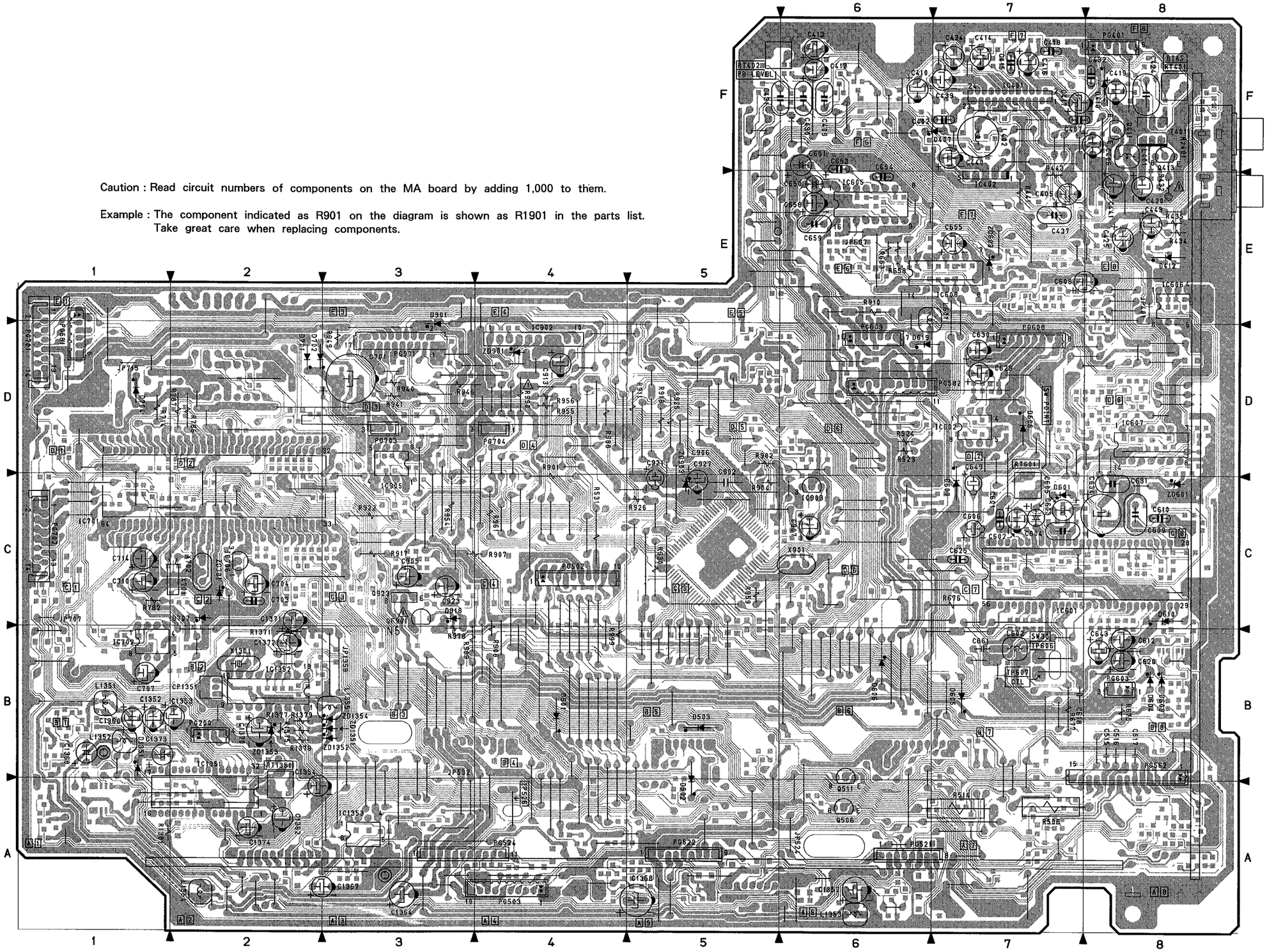
15P JACK·VIDEO I/O [REA]. 15P ADAPTER [ECA] SCHEMATIC DIAGRAMS



MA CIRCUIT BOARD [SIDE A]

Caution : Read circuit numbers of components on the MA board by adding 1,000 to them.

Example : The component indicated as R901 on the diagram is shown as R1901 in the parts list.
Take great care when replacing components.



MA(MAIN)-SIDE A-
[PATTERN No.JA1400-3]

Symbol No.	Parts Location
R1685	B-8D
R1686	B-8D
R1687	B-7D
R1689	B-8D
R1692	B-6E
R1694	B-6E
R1695	B-7E
R1696	B-7D
R1697	B-6E
R1699	B-6E
R1701	B-3D
R1705	B-2C
R1706	B-1D
R1707	B-1D
R1708	B-1D
R1709	B-1D
R1710	B-1D
R1711	B-2D
R1712	B-1D
R1713	B-1D
R1714	A-1D
R1715	B-2D
R1719	B-2D
R1720	B-2D
R1722	B-2D
R1723	B-2D
R1724	B-2D
R1726	B-2C
R1728	B-2C
R1729	B-2C
R1730	B-2C
R1732	B-1B
R1733	B-1B
R1734	B-1B
R1735	B-1C
R1736	B-1C
R1737	B-1C
R1738	B-2B
R1739	B-1C
R1740	B-1C
R1741	B-1C
R1742	B-1C
R1743	B-1C
R1744	B-2C
R1749	B-2C
R1750	B-2C
R1754	B-1C
R1755	B-1C
R1758	B-1C
R1780	B-1B
R1781	B-2B
R1782	A-1C
R1783	B-2C
R1786	A-2D
R1787	A-2D
R1788	B-2D
R1789	B-3C
R1790	B-2C
R1796	B-2C
R1901	A-4C
R1902	A-5D
R1904	A-5C
R1905	B-7C
R1906	B-6C
R1907	A-3C
R1908	A-4B
R1909	A-3B
R1910	A-6E
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R1913	B-3C
R1914	B-3C
R1915	B-3C
R1916	B-3C
R1917	A-3C
R1918	A-5D
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R1921	B-6C
R1922	A-3C
R1923	B-3C
R1924	B-6C
R1925	A-5D
R1926	A-5C
R1928	B-3D
R1930	A-5C
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R1943	B-3D
R1944	B-3D
R1945	B-4D
R1946	A-3D
R1947	B-3D
R1948	B-3D
R1949	A-3D
R1950	B-5C
R1951	B-5B
R1952	B-5B
R1953	B-5B
R1954	A-3C
R1955	A-4D
R1956	A-4D
R1957	B-3D
R1958	B-6C
R1959	A-5C
R1960	B-3C
R1961	A-4C
R1966	B-5D
R1969	B-4B
R1970	B-5C
R1975	B-6D
R1978	A-3B
R1979	B-3C
R1980	B-3B
R1988	A-4D
R1990	A-4D
R1993	B-3D
R1994	B-3D
R1995	B-3D
R1996	B-3D
R1997	B-3D
R1998	B-3D
R1999	A-4B
RJ	
RJ1401	A-8F
RT	
RT1351	A-2A
RT1401	A-8F
RT1402	A-5F
RT1601	A-7C
T	
T1401	A-8F
TP	
TP1351	B-2B
TP1401	B-7F
TP1402	B-7F
TP1503	B-6A
TP1504	B-6A
TP1507	B-5A
TP1525	B-6A
TP1526	A-4A
TP1527	B-4C
TP1528	B-4A
TP1604	B-8D
TP1606	A-7B
TP1607	A-7B
TP1608	B-8C
TP1609	B-8C
TP1610	B-8C
X	
X1301	A-2B
X1701	A-2C
X1702	A-2C
X1901	A-6C
ZD	
ZD1351	A-3B
ZD1352	A-3B
ZD1353	A-2B
ZD1354	A-3B
ZD1601	A-8C
ZD1602	A-7E
ZD1701	A-2C
ZD1901	A-4D
ZD1903	A-5C

IDENTIFICATION OF PARTS LOCATION

MA [MAIN]

Symbol No.	Parts Location
C	
C1351	B-1B
C1352	A-1B
C1353	A-2B
C1354	A-2A
C1355	B-2B
C1356	B-6A
C1357	A-6A
C1358	A-5A
C1359	B-1B
C1360	A-1B
C1361	B-2A
C1362	A-2A
C1363	B-1B
C1364	A-3A
C1365	B-3A
C1366	B-3A
C1367	A-2A
C1368	A-1B
C1369	B-2B
C1370	A-2B
C1371	A-2C
C1372	A-2B
C1373	A-1B
C1374	A-2A
C1377	B-2B
C1378	B-2B
C1379	B-2B
C1402	A-7F
C1405	A-7E
C1406	A-8F
C1407	A-7F
C1410	A-6F
C1411	B-6F
C1412	A-6F
C1413	A-6F
C1414	A-7F
C1415	A-7F
C1416	A-7F
C1417	A-7F
C1418	A-7F
C1419	A-8F
C1420	A-8E
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C1423	B-8F
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C1425	A-8E
C1426	B-8F
C1431	A-6F
C1432	A-8F
C1434	A-7F
C1437	A-7E
C1439	A-7F
C1440	A-7F
C1441	A-8E
C1442	B-8F
C1443	A-8E
C1501	B-5A
C1502	B-4C
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C1507	B-5A
C1508	B-3A
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C1516	A-8B
C1517	A-8B
C1518	B-8B
C1519	B-8B
C1520	B-8B
C1531	B-4A
C1532	B-4A
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C1602	A-7C
C1603	A-7C
C1604	A-7C
C1605	A-7C
C1606	A-7C
C1608	A-7E
C1609	A-8C
C1610	A-8C
C1611	B-8C
C1612	A-8B
C1613	B-6E
C1614	B-8D
C1618	A-7B
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C1624	B-7C
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C1629	A-7D
C1630	A-7D
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C1633	B-7D
C1634	A-8C
C1635	B-7D
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C1643	A-8B
C1644	B-8C
C1645	B-8C
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C1911	B-4D
C1913	A-4D
C1914	B-4D
C1916	B-4D
C1917	B-4D
C1918	B-6C
C1919	B-6C
C1921	A-5C
C1922	B-6C
C1923	A-3C
C1927	A-5C
C1928	B-6D
C1954	B-5C
CP	
CP1351	A-2B
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D1407	A-7F
D1410	A-8F
D1412	A-8E
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D1502	A-5A
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D1702	A-2D
D1704	A-1D
D1707	A-2C
D1901	A-3D
D1918	A-3C
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IC1352	A-2B
IC1353	A-3A
IC1401	A-7F
IC1402	A-7E
IC1601	A-8C
IC1602	A-7D
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IC1609	B-7E
IC1610	B-7E
IC1612	B-8B
IC1613	B-8B
IC1701	A-2C
IC1702	A-1B
IC1706	A-2C
IC1901	B-5C
IC1902	A-4D
IC1903	A-6C
IC1905	A-3D
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L1352	A-1B
L1353	A-6A
L1354	A-2A
L1355	A-3B
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Q1357	B-2B
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Q1518	B-7C
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Q1914	B-4A
Q1919	B-6D
Q1923	A-3C
Q1924	B-3C
Q1925	B-6C
Q1931	B-7C
QF	
QF1901	A-3C
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R1352	B-1B
R1353	B-2B
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R1355	B-6A
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R1439	B-7F
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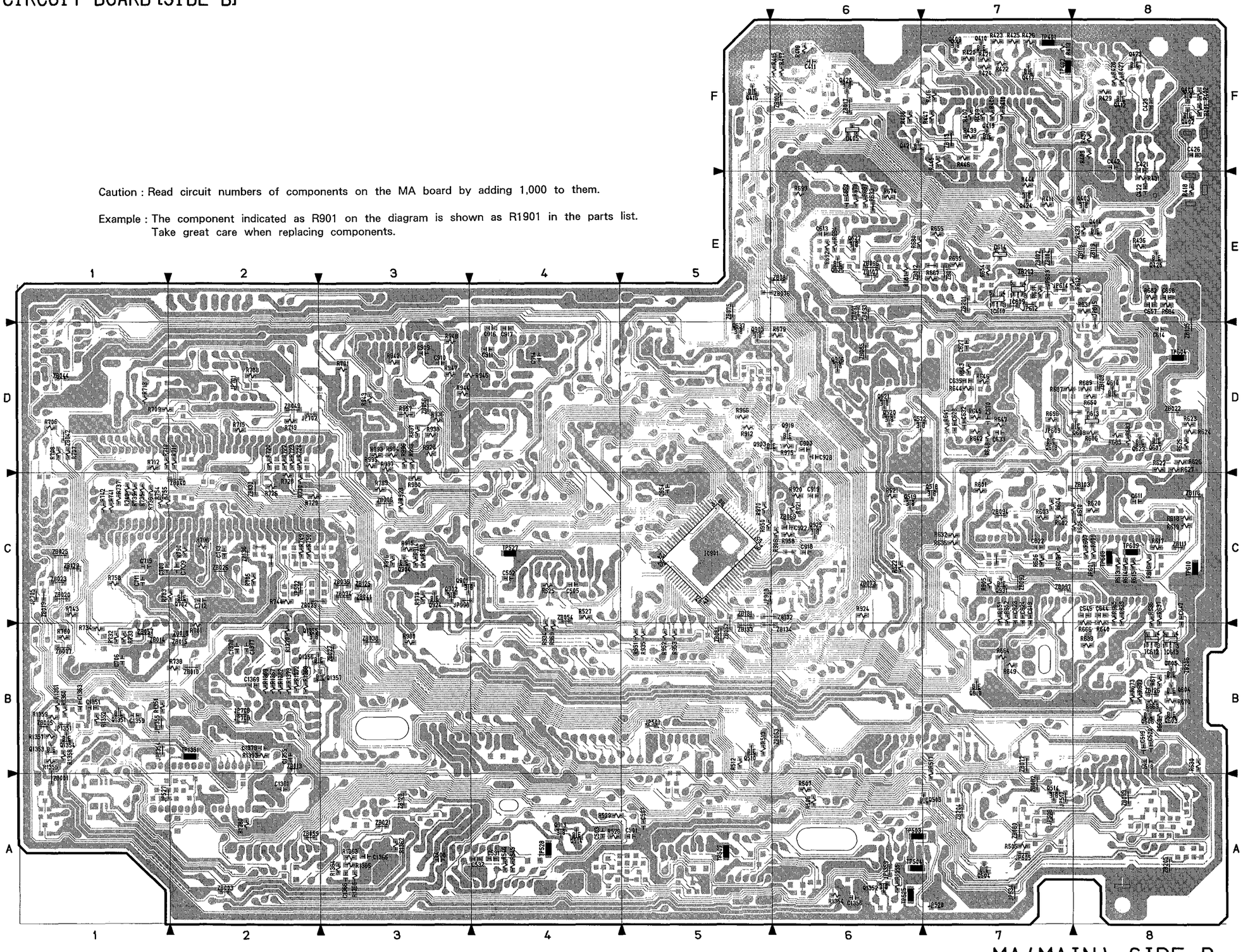
R1444	B-7E
R1445	B-7F
R1446	B-7F
R1447	B-7F
R1505	B-7A
R1506	B-6A
R1507	B-6A
R1508	A-7A
R1512	B-5B
R1513	B-5B
R1514	A-7A
R1517	B-7A
R1521	B-6C
R1522	B-6C
R1523	A-6D
R1524	A-6D
R1525	B-4C
R1527	B-4C
R1528	B-4A
R1529	B-4A
R1531	A-4C
R1545	B-4A
R1546	B-4A
R1601	B-7C
R1602	B-7C
R1603	B-7C
R1604	B-7C
R1605	B-8C
R1606	B-7C
R1607	B-8C
R1608	B-7C
R1609	B-8C
R1610	B-8C
R1611	B-7E
R1612	B-7E
R1613	B-8C
R1614	B-8C
R1615	B-8C
R1616	B-8C
R1617	B-8C
R1618	B-8C
R1619	B-8C
R1620	B-8C
R1622	B-8D
R1623	B-8D
R1624	B-8D
R1625	B-8D
R1626	B-8D
R1627	B-8D
R1630	B-8B
R1631	B-8E
R1632	B-7C
R1635	B-7C
R1636	B-8C
R1637	B-8C
R1638	B-8B
R1639	B-8C
R1640	B-8B
R1641	B-7D
R1642	B-7D
R1643	B-7D
R1644	B-7D
R1645	B-7D
R1646	B-7D
R1647	B-7D
R1648	B-7D
R1649	B-7B
R1650	B-8D
R1651	B-7C
R1652	B-7C
R1654	B-7E
R1655	B-7E
R1658	A-6E
R1663	A-6E
R1664	B-7B
R1665	B-8C
R1666	B-8B
R1667	B-7E
R1668	B-8B
R1669	B-8B
R1670	B-8B
R1671	B-8B
R1672	B-8B
R1673	B-8B
R1674	B-6E
R1675	A-8B
R1676	A-7C
R1677	A-7B
R1678	B-6E
R1679	B-6D
R1680	B-6E
R1681	B-6E
R1682	B-8E
R1683	B-8D
R1684	B-8E
R1685	B-8D
R1686	B-8D
R1687	B-7D
R1689	B-8D
R1692	B-6E
R1694	B-6E
R1695	B-7E
R1696	B-7D
R1697	B-6E
R1699	B-6E
R1701	B-3D
R1705	B-2C
R1706	B-1D
R1707	B-1D
R1708	B-1D
R1709	B-1D
R1710	B-1D
R1711	B-2D
R1712	B-1D
R1713	B-1D
R1714	A-1D
R1715	B-2D
R1719	B-2D
R1720	B-2D
R1722	B-2D
R1723	B-2D
R1724	B-2D
R1726	B-2C
R1728	B-2C
R1729	B-2C
R1730	B-2C
R1732	B-1B
R1733	B-1B
R1734	B-1B
R1735	B-1C
R1736	B-1C
R1737	B-1C
R1738	B-2B
R1739	B-1C
R1740	B-1C
R1741	B-1C
R1742	B-1C
R1743	B-1C
R1744	B-2C
R1749	B-2C
R1750	B-2C
R1754	B-1C
R1755	B-1C
R1758	B-1C
R1780	B-1B
R1781	B-2B
R1782	A-1C
R1783	B-2C
R1786	A-2D
R1787	A-2D
R1788	B-2D
R1789	B-3C
R1790	B-2C
R1796	B-2C
R1901	A-4C
R1902	A-5D
R1904	A-5C
R1905	B-7C
R1906	B-6C
R1907	A-3C
R1908	A-4B
R1909	A-3B
R1910	A-6E
R1911	A-5D
R1912	B-5D
R1913	B-3C
R1914	B-3C
R1915	B-3C
R1916	B-3C
R1917	A-3C
R1918	A-5D
R1920	B-6C
R1921	B-6C
R1922	A-3C
R1923	B-3C
R1924	B-6C
R1925	A-5D
R1926	A-5C
R1928	B-3D
R1930	A-5C
R1934	B-4B
R1935	B-5B
R1936	B-3D
R1937	B-3D
R1938	B-3D
R1940	A-3D
R1941	A-3D
R1942	B-3D
R1943	B-3D
R1944	B-3D
R1945	B-4D
R1946	A-3D
R1947	B-3D
R1948	B-3D
R1949	A-3D
R1950	B-5C
R1951	B-5B
R1952	B-5B
R1953	B-5B
R1954	A-3C
R1955	A-4D
R1956	A-4D
R1957	B-3D
R1958	B-6C
R1959	A-5C
R1960	B-3C
R1961	A-4C
R1966	B-5D
R1969	B-4B
R1970	B-5C
R1975	B-6D
R1978	A-3B
R1979	B-3C
R1980	B-3B
R1988	A-4D
R1990	A-4D
R1993	B-3D
R1994	B-3D
R1995	B-3D
R1996	B-3D
R1997	B-3D
R1998	B-3D
R1999	A-4B
RJ	
RJ1401	A-8F
RT	
RT1351	A-2A
RT1401	A-8F
RT1402	A-5F
RT1601	A-7C
T	
T1401	A-8F
TP	
TP1351	B-2B
TP1401	B-7F
TP1402	B-7F
TP1503	B-6A
TP1504	B-6A
TP1507	B-5A
TP1525	B-6A
TP1526	A-4A
TP1527	B-4C
TP1528	B-4A
TP1604	B-8D
TP1606	A-7B
TP1607	A-7B
TP1608	B-8C
TP1609	B-8C
TP1610	B-8C
X	
X1301	A-2B
X1701	A-2C
X1702	A-2C
X1901	A-6C
ZD	
ZD1351	A-3B
ZD1352	A-3B
ZD1353	A-2B
ZD1354	A-3B
ZD1601	A-8C
ZD1602	A-7E
ZD1701	A-2C
ZD1901	A-4D
ZD1903	A-5C

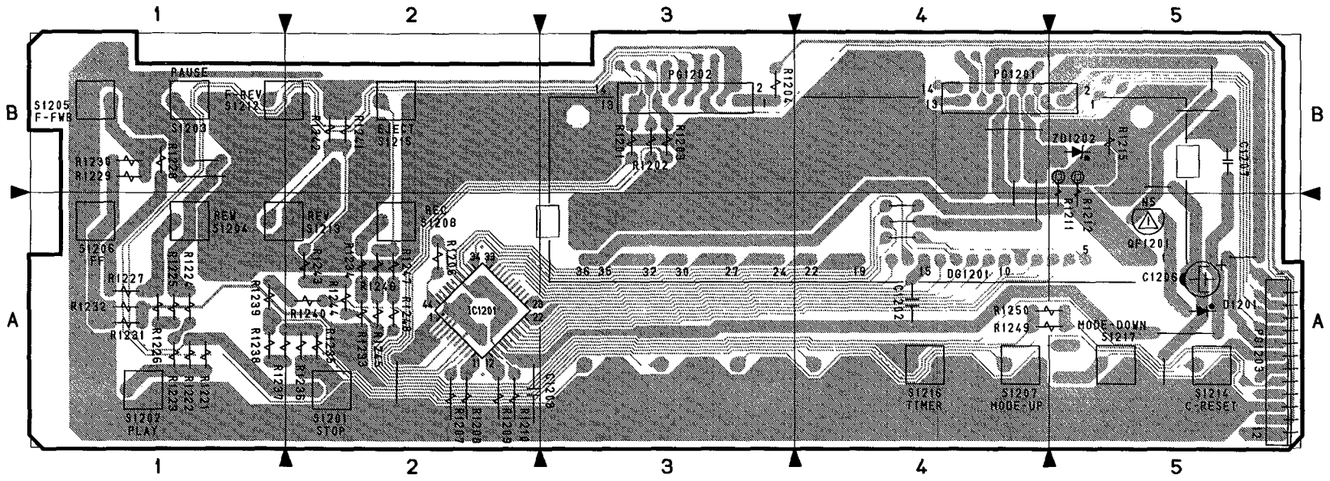
MA CIRCUIT BOARD [SIDE B]

Caution : Read circuit numbers of components on the MA board by adding 1,000 to them.

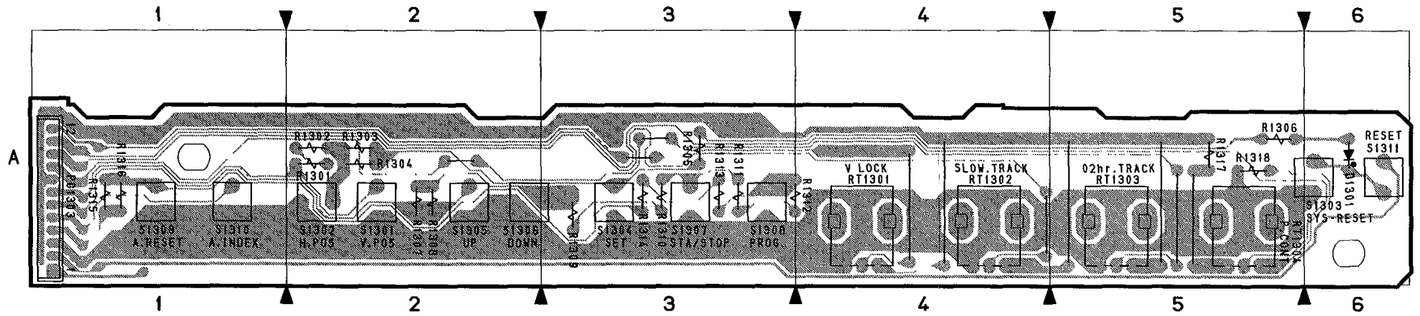
Example : The component indicated as R901 on the diagram is shown as R1901 in the parts list.
Take great care when replacing components.



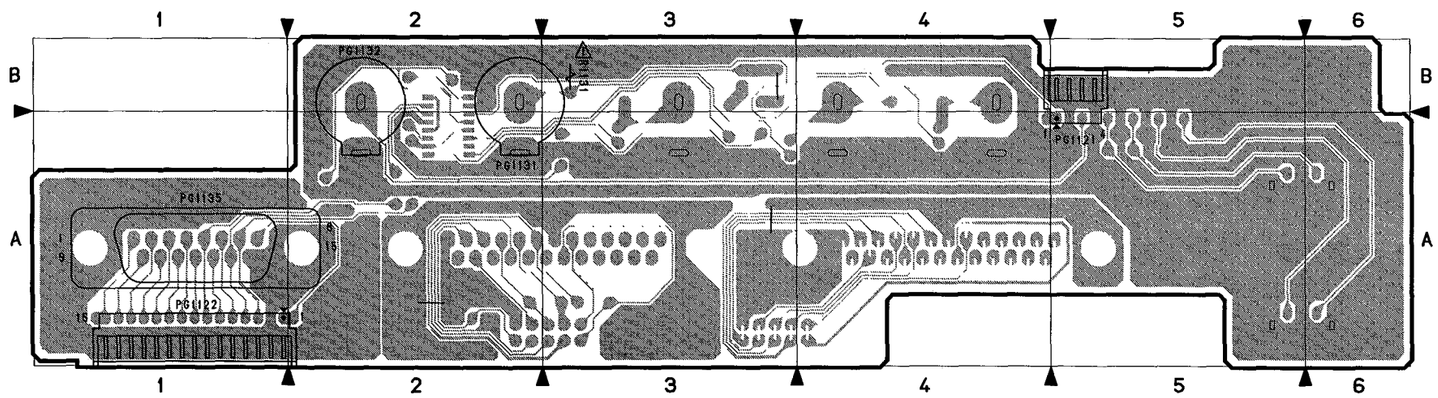
MA(MAIN)-SIDE B-
[PATTERN No.JA1400-3]



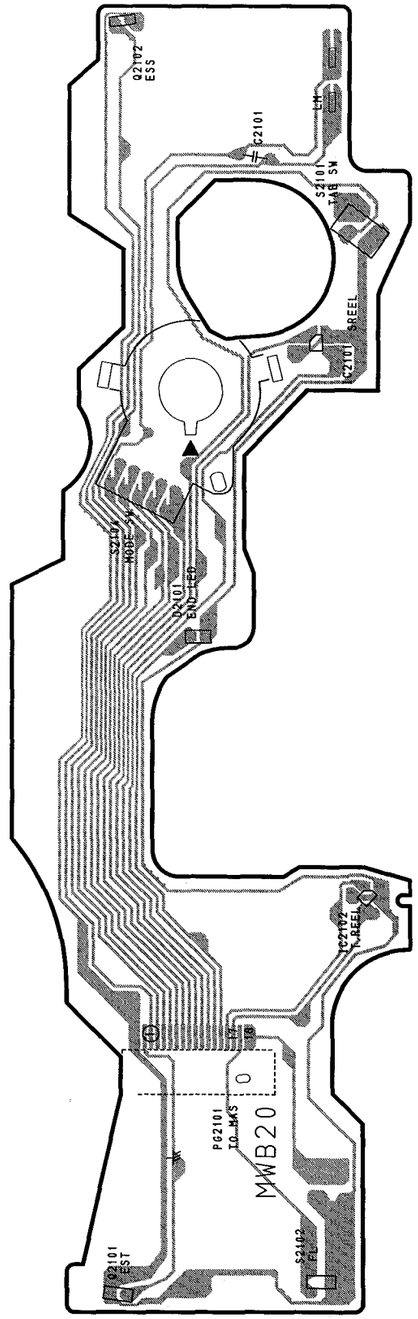
FIT(DISPLAY)
[PATTERN No.JK1220-4]



FSW(FRONT SWITCH)
[PATTERN No.JK1220-4]



REA(15P JACK・VIDEO I/O)
[PATTERN No.JK1220-4]



MWB(SENSOR)
[PATTERN No.JK1036-5]

IDENTIFICATION OF PARTS LOCATION

FIT
[DISPLAY]

Symbol No.	Parts Location
C	
C1202	4A
C1206	5A
C1207	5B
C1208	2A
D	
D1201	5A
DG	
DG1201	4A
IC	
IC1201	2A
PG	
PG1201	4B
PG1202	3B
PG1203	5A
QF	
QF1201	5A
R	
R1201	3B
R1202	3B
R1203	3B
R1204	3B
R1206	2A
R1207	2A
R1208	2A
R1209	2A
R1210	2A
R1211	5B
R1212	5B
R1215	5B
R1221	1A
R1222	1A
R1223	1A
R1224	1A
R1225	1A
R1226	1A
R1227	1A
R1228	1B
R1229	1B
R1230	1B
R1231	1A
R1232	1A
R1233	2A
R1234	2A
R1235	2A
R1236	2A
R1237	1A
R1238	1A
R1239	1A
R1240	2A
R1241	2B
R1242	2B
R1243	2A
R1244	2A
R1245	2A
R1246	2A
R1247	2A

Symbol No.	Parts Location
R1248	2A
R1249	4A
R1250	4A
S	
S1201	2A
S1202	1A
S1203	1B
S1204	1A
S1205	1B
S1206	1A
S1207	4A
S1208	2A
S1212	1B
S1213	1A
S1214	5A
S1215	2B
S1216	4A
S1217	5A
ZD	
ZD1202	5B

FSW
[FRONT SWITCH]

Symbol No.	Parts Location
D	
D1301	6A
PG	
PG1303	1A
R	
R1301	2A
R1302	2A
R1303	2A
R1304	2A
R1305	3A
R1306	5A
R1307	2A
R1308	2A
R1309	3A
R1310	3A
R1311	3A
R1312	3A
R1313	3A
R1314	3A
R1315	1A
R1316	1A
R1317	5A
R1318	5A
RT	
RT1301	4A
RT1302	4A
RT1303	5A
RT1304	5A
S	
S1301	2A
S1302	2A
S1303	6A
S1304	3A
S1305	2A
S1306	2A
S1307	3A
S1308	3A
S1309	1A
S1310	1A
S1311	6A

REA
[15P JACK VIDEO I/O]

Symbol No.	Parts Location
PG	
PG1121	5A
PG1122	1A
PG1131	2B
PG1132	2B
PG1135	1A
R	
R1131	3B

IDENTIFICATION OF PARTS LOCATION

PRE
[PRE/REC AMP]

Symbol No	Parts Location
C	
C0001	B-4A
C0002	B-4B
C0003	B-4B
C0004	B-5B
C0005	B-4A
C0006	B-5A
C0007	B-5B
C0008	B-5B
C0009	B-5A
C0010	B-5B
C0011	B-5A
C0012	B-4A
C0013	B-5A
C0014	A-4A
C0015	B-4A
C0016	B-4A
C0017	A-4A
C0018	B-4A
C0019	B-5A
C0020	B-5A
C0021	A-5A
C0022	B-5A
C0023	A-5A
D	
D0001	B-2A
D0002	B-2B
D0004	B-3B
IC	
IC0001	A-5A
L	
L0001	A-4B
L0002	A-5B
L0003	A-4A
L0004	A-5A
L0005	A-5A
L0006	A-5A
L0007	A-4A
PG	
PG0001	A-5B
PG0002	A-1A
PG0003	A-2B
Q	
Q0001	B-2B
Q0002	B-5A
Q0003	B-4A
Q0004	B-4A
Q0005	B-3A
R	
R0001	B-4A
R0002	B-4B
R0003	B-4A
R0004	B-5A
R0005	B-5A
R0006	B-5A
R0007	B-5A
R0008	B-5B

Symbol No	Parts Location
R0009	B-4A
R0010	B-4A
R0011	B-5A
R0012	B-5A
R0013	B-4A
R0014	B-4A
R0015	B-4A
R0016	B-4A
R0017	B-4A
R0018	B-2B
R0019	B-2B
R0022	B-4A
R0023	B-3A

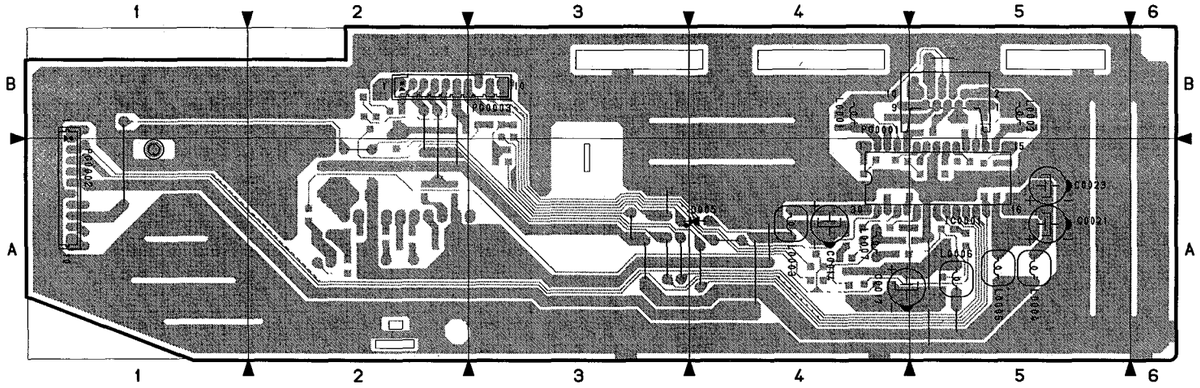
PTR
[POWEWR TRANS]

Symbol No.	Parts Location
C	
C1852	6B
C1853	7B
C1855	5A
C1856	6A
C1857	6A
C1858	6B
C1859	6A
C1867	6B
C1891	1A
D	
D1851	5B
D1852	6A
D1856	6B
D1857	6A
FU	
FU1851	4B
FU1852	4B
FU1853	2B
L	
L1851	2A
L1852	2A
PG	
PG2853	7B
Q	
Q1851	6B
R	
R1851	6B
R1871	7A
T	
T1852	4A
ZD	
ZD1851	6B

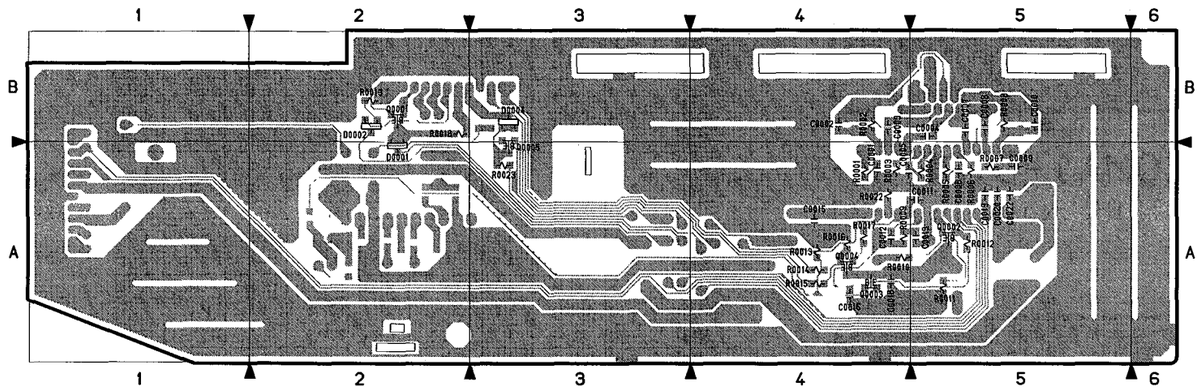
PUR
[REGULATOR]

Symbol No	Parts Location
C	
C2851	3A
C2852	2B
C2853	2B
C2854	2B
C2855	2B
C2856	1B
C2857	1B
C2858	1B
C2859	1A
C2860	1A
C2861	1A
C2865	1A
C2870	1A
C2872	1A
D	
D2851	3B
D2852	2B
D2853	2B
D2854	3B
IC	
IC2851	1A
IC2852	1B
PG	
PG2851	3A
PG2852	2A
PG2853	3A
Q	
Q2851	2B
Q2863	1A
R	
R1884	1A
R2851	2B
R2852	2B
R2859	1A
R2860	1A
R2868	1A
R2869	1A
R2870	1A
ZD	
ZD2851	2B
ZD2858	1A

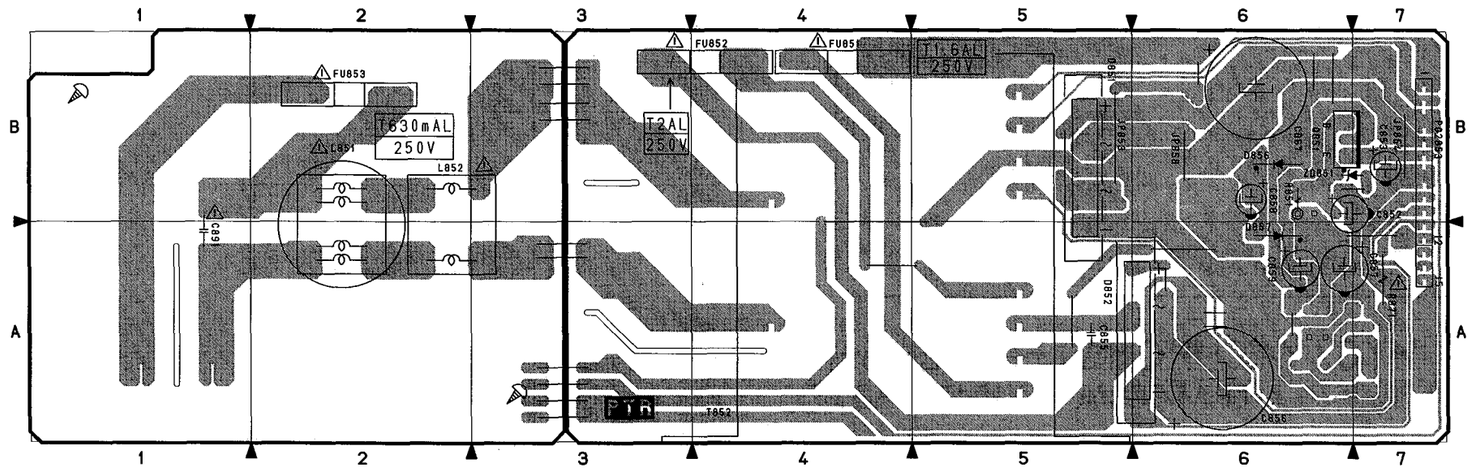
PRE. PTR. PUR. BAT. ECA CIRCUIT BOARDS



PRE(PRE/REC AMP)-SIDE A-
[PATTERN No.JA1240-2]



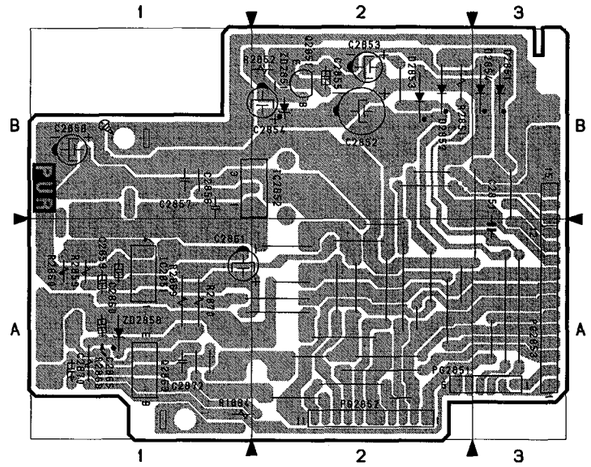
PRE(PRE/REC AMP)-SIDE B-
[PATTERN No.JA1240-2]



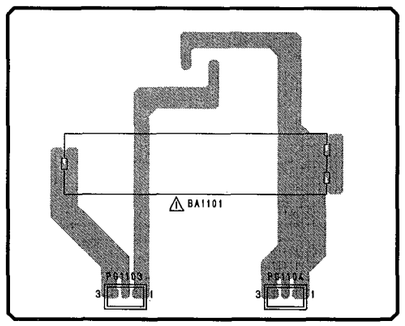
Caution : Read circuit numbers of components on the PTR board by adding 1,000 to them.

Example : The component indicated as R851 on the diagram is shown as R1851 in the parts list. Take great care when replacing components.

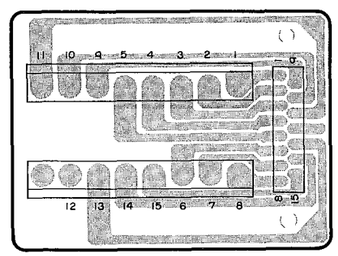
PTR(POWER TRANS)
[PATTERN No.JK1220-4]



PUR(REGULATOR)
[PATTERN No.JK1220-4]

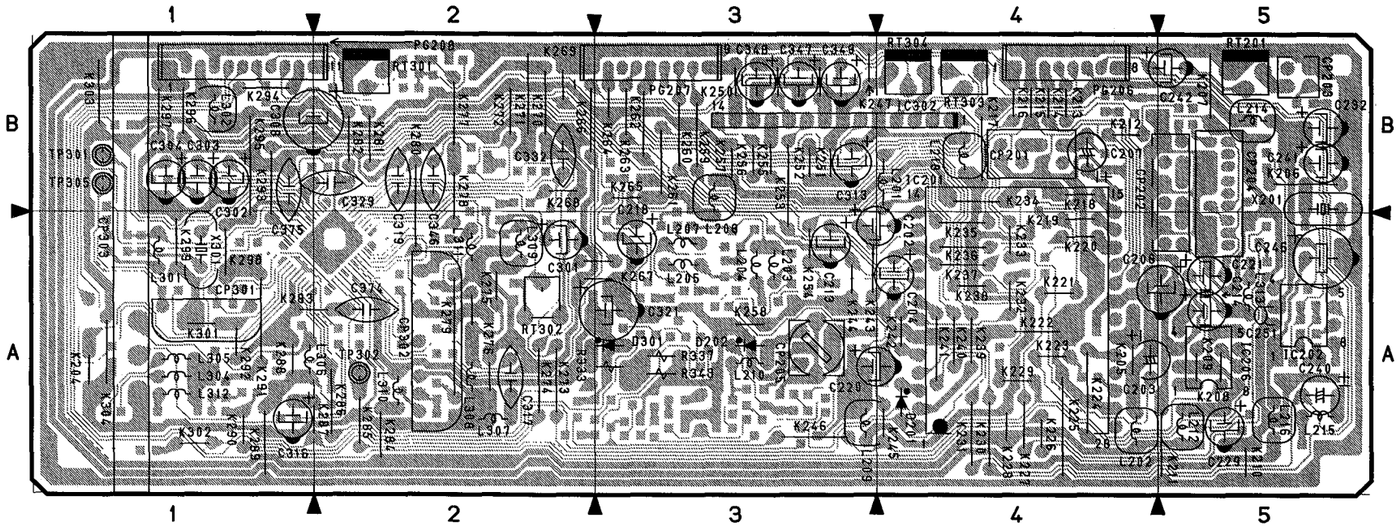


BAT(BATTERY)
[PATTERN No.JK1220-4]

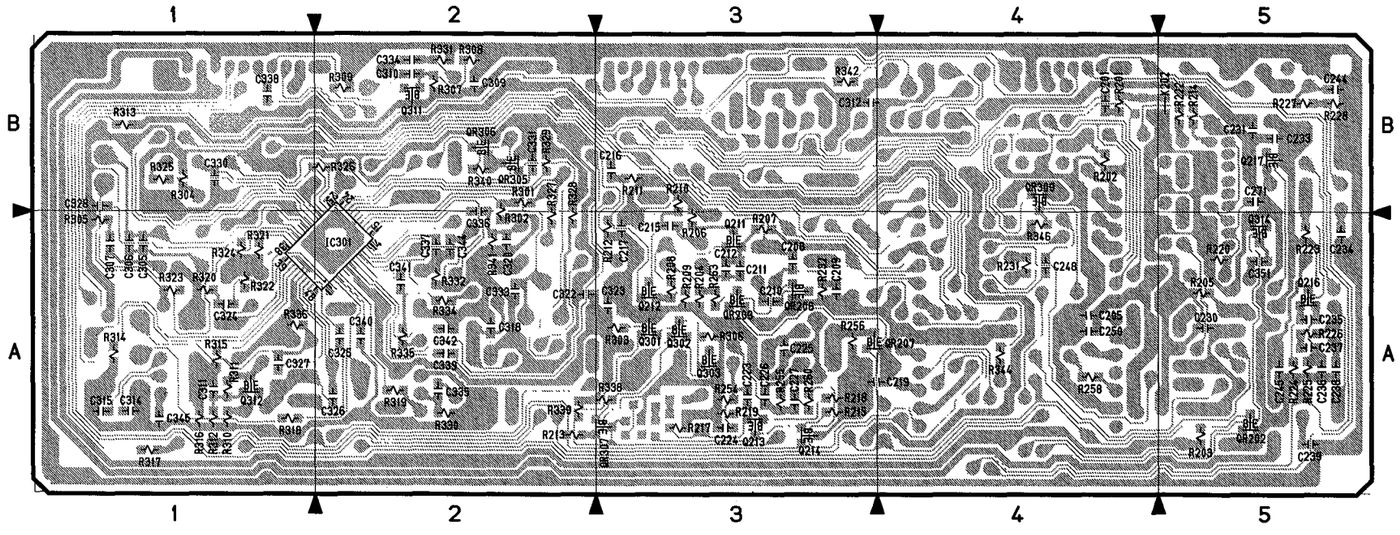


ECA(15PADAPTER)
[PATTERN No.150583-3]

WYC CIRCUIT BOARD



WYC(Y/CHROMA)-SIDE A-
[PATTERN No.151821-31]



WYC(Y/CHROMA)-SIDE B-
[PATTERN No.151821-31]

IDENTIFICATION OF PARTS LOCATION

WYC [Y/CHROMA]

Symbol No.	Parts Location
C	
C0201	B-4B
C0202	A-4A
C0203	A-4A
C0204	A-4A
C0205	B-4A
C0206	A-5A
C0207	A-4B
C0208	B-3A
C0209	B-3A
C0210	B-3A
C0211	B-3A
C0212	B-3A
C0213	A-3A
C0214	A-5A
C0215	B-3A
C0216	B-3B
C0217	B-3A
C0218	A-3A
C0219	B-3A
C0220	A-3A
C0221	A-5A
C0223	B-3A
C0224	B-3A
C0225	B-3A
C0226	B-3A
C0227	B-3A
C0229	A-5A
C0230	B-5A
C0231	B-5B
C0232	A-5B
C0233	B-5B
C0234	B-5A
C0235	B-5A
C0236	B-5A
C0237	B-5A
C0238	B-5A
C0239	B-5A
C0240	A-5A
C0241	A-5B
C0242	A-5B
C0244	B-5B
C0245	B-5A
C0246	A-5A
C0248	B-4A
C0250	B-4A
C0251	A-5A
C0271	B-5B
C0301	A-2A
C0302	A-1B
C0303	A-1B
C0304	A-1B
C0305	B-1A
C0306	B-1A
C0307	B-1A
C0308	A-1B
C0309	B-2B
C0310	B-2B
C0311	B-1A
C0312	B-3B
C0313	A-3B
C0314	B-1A
C0315	B-1A
C0316	A-1A
C0317	A-2A
C0318	B-2A
C0319	A-2B
C0320	B-2A
C0321	A-3A
C0322	B-2A
C0323	B-3A
C0324	B-1A
C0325	B-2A
C0326	B-2A
C0327	B-1A
C0328	B-1B
C0329	A-2B
C0330	B-1B
C0331	B-2B
C0332	A-2B
C0333	B-2A
C0334	B-2B
C0335	B-2A
C0336	B-2A
C0337	B-2A
C0338	B-1B
C0339	B-2A
C0340	B-2A
C0341	B-2A
C0342	B-2A
C0344	B-2A
C0345	B-1A
C0346	A-2B
C0347	A-3B
C0348	A-3B
C0349	A-3B
C0351	B-5A
C0374	A-2A
C0375	A-1B
CP	
CP0201	A-4B
CP0202	A-5B
CP0203	A-5B
CP0204	A-5B
CP0205	A-3A
CP0301	A-1A
CP0302	A-2A
CP0303	A-1A
D	
D0201	A-4A
D0202	A-3A
D0301	A-3A
IC	
IC0201	A-4A
IC0202	A-5A
IC0206	A-5A
IC0301	B-2A
IC0302	A-4B
L	
L0201	A-4B
L0202	A-4A
L0203	A-3A
L0204	A-3A
L0205	A-3A
L0207	A-3A
L0208	A-3B
L0209	A-3A
L0210	A-3A
L0212	A-5A
L0214	A-5B
L0215	A-5A
L0216	A-5A
L0218	A-4B
L0301	A-1A
L0302	A-1B
L0304	A-1A
L0305	A-1A
L0306	A-1A
L0307	A-2A
L0308	A-2A
L0309	A-2A
L0310	A-2A
L0311	A-2A
L0312	A-1A
L0313	A-5A
PG	
PG0206	A-4B
PG0207	A-3B
PG0208	A-1B
Q	
Q0211	B-3A
Q0212	B-3A
Q0213	B-3A
Q0214	B-3A
Q0216	B-5A
Q0217	B-5B
Q0301	B-3A
Q0302	B-3A
Q0303	B-3A
Q0311	B-2B
Q0312	B-1A
Q0314	B-5A
QR	
QR0202	B-5A
QR0206	B-3A
QR0207	B-3A
QR0209	B-3A
QR0305	B-2B
QR0306	B-2B
QR0307	B-3A
QR0309	B-4B
R	
R0201	B-4B
R0202	B-4B
R0203	B-5A
R0204	B-3A
R0205	B-5A
R0206	B-3A
R0207	B-3A
R0208	B-3A
R0209	B-3A
R0210	B-3B
R0211	B-3B
R0212	B-3A
R0213	B-2A
R0214	B-5B
R0215	B-3A
R0217	B-3A
R0218	B-3A
R0219	B-3A
R0220	B-5A
R0222	B-5B
R0223	B-5A
R0224	B-5A
R0225	B-5A
R0226	B-5A
R0227	B-5B
R0228	B-5B
R0231	B-4A
R0232	B-3A
R0254	B-3A
R0255	B-3A
R0256	B-3A
R0258	B-4A
R0260	B-3A
R0263	B-3A
R0301	B-2B
R0302	B-2A
R0303	B-3A
R0304	B-1B
R0305	B-1A
R0306	B-3A
R0307	B-2B
R0308	B-2B
R0309	B-2B
R0310	B-1A
R0311	B-1A
R0312	B-1A
R0313	B-1B
R0314	B-1A
R0315	B-1A
R0316	B-1A
R0317	B-1A
R0318	B-1A
R0319	B-2A
R0320	B-1A
R0321	B-1A
R0322	B-1A
R0323	B-1A
R0324	B-1A
R0325	B-1B
R0326	B-2B
R0327	B-2B
R0328	B-2B
R0329	B-2B
R0330	B-2A
R0331	B-2B
R0332	B-2A
R0333	A-3A
R0334	B-2A
R0335	B-2A
R0336	B-1A
R0337	A-3A
R0338	B-3A
R0339	B-2A
R0340	B-2B
R0341	B-2A
R0342	B-3B
R0344	B-4A
R0346	B-4A
R0348	A-3A
RT	
RT0201	A-5B
RT0301	A-2B
RT0302	A-2A
RT0303	A-4B
RT0304	A-4B
TP	
TP0301	A-1B
TP0302	A-2A
TP0305	A-1B
X	
X0201	A-5B
X0301	A-1A

CHAPTER 8 MICROPROCESSOR PIN FUNCTION TABLE/ BLOCK DIAGRAMS

1. Microprocessor (μ P) Pin Function Tables

1-1. SUB- μ P (IC1201) Pin Functions

Pin No.	I/O	Active Level	Abbreviation	Function
1	-	-	SW1	Grounded.
2	-	-	SW2	
3	-	-	SW3	
4	-	-	SW4	
5	-	-	-	Not used.
6	I	Pulse	DATA(M-CG/SUB)	Common communications lines between the MAIN- μ P and SUB- μ P character generator; data is communicated synchronized with the clock signal.
8	I	Pulse	CLK(M-CG/SUB)	
7	-	-	VSS	Grounded.
9	I	Hi	STB(M-SUB)	Strobe signal from the MAIN- μ P.
10	I	Hi	KEY 1	Key inputs.
11	I	Hi	KEY 2	
12	I	Hi	KEY 3	
13	I	Hi	KEY 4	
14	I	-	Vdd	5V power input.
15	O	Pulse	SEGMENT (a)	FL display segment control outputs. Synchronized with the grid control outputs at pins 29-37.
16	O	Pulse	SEGMENT (b)	
17	O	Pulse	SEGMENT (c)	
18	O	Pulse	SEGMENT (d)	
19	O	Pulse	SEGMENT (e)	
20	O	Pulse	SEGMENT (f)	
21	O	Pulse	SEGMENT (g)	
22	O	Pulse	SEGMENT (h)	
23	O	Pulse	SEGMENT (i)	
24	-	-	-	Not used.
25	-	-	-	
26	-	-	-	
27	I	-	VEE	-30V pull-down power input for the FL display.
28	-	-	-	Not used.
29	O	Pulse	GRID (9)	FL display grid control outputs. Synchronized with the segment control outputs at pins 15-23.
30	O	Pulse	GRID (8)	
31	O	Pulse	GRID (7)	
32	O	Pulse	GRID (6)	
33	O	Pulse	GRID (5)	
34	O	Pulse	GRID (4)	
35	O	Pulse	GRID (3)	
36	O	Pulse	GRID (2)	
37	O	Pulse	GRID (1)	
38	I	-	Vdd	5V power input.
39	-	-	-	Not used.
40	-	-	-	
41	-	-	-	
42	-	-	-	
43	-	-	VSS	Grounded.
44	I	Pulse	OSC	Oscillator input.

1-2. MAIN- μ P (IC1701) Pin Functions

Pin No.	I/O	Active Level	Abbreviation	Function
1	O	Pulse	STB(M-SUB)	Outputs the strobe signal to the SUB- μ P.
2	O	Pulse	DATA(M-CG/SUB)	Common communications lines between the MAIN- μ P and character generator/SUB- μ P; data is communicated synchronized with the clock signal.
3	O	Pulse	CLK(M-CG/SUB)	
4	O	Pulse	STB(M-CG)	Outputs the strobe signal to the character generator.
5	I	Pulse	BUSY-OSD	BUSY signal input from character generator.
6	I	Pulse	DATA(S-M)	Common communications lines between the system control μ P and MAIN- μ P; date is communicated synchronized with the clock signal.
7	O	Pulse	DATA(M-S)	
8	O	Pulse	CLK(M-S)	
9	O	Pulse	SOFT RUN	PWM output to control the voltage applied to the capstan during soft-landing.
10	O	-	-	Not used.
11	O	Pulse	45Hz	Outputs a reference signal to control the capstan phase in the 27 mode.
12	I/O	Hi/Lo	CLR/BW	"Lo" is output when B/W is specified as the VIDEO MODE option, "Hi" is output when COLOUR is specified and a signal is input when AUTO is specified.
13	I	Hi	-	Mode selection.
14	I	Hi	-	Mode selection.
15	O	-	-	Not used.
16	I	Lo	HEAD RESET	When "Lo" is input, the MAIN- μ P resets the cylinder time of use.
17	-	-	GND	Grounded.
18	O	Hi	CS SYS	Chip select signal between the MAIN- μ P and SYS.CON- μ P.
19	O	-	-	Not used.
20	O	-	-	Not used.
21	-	-	-	Not used.
22	O	Pulse	DATA(M-ROM)	Communications lines between the MAIN- μ P and EEPROM; data is communicated synchronized with the clock signal.
60	I	Pulse	DATA(ROM-M)	
61	O	Pulse	CLK(M-ROM)	
23	-	-	-	Not used.
24	O	Hi	BLK/WHT	OSD character colour control output. (Hi: Black, Lo: White)
25	O	Hi	RESET	"Hi" output resets the SYS.CON- μ P.
26	I	Lo	ALARM IN	Alarm recording start input.
27	O	-	-	Not used.
28	I	Lo	ALARM REC RST	When "Lo" is input, ALARM REC is stopped.
29	I	Lo	TAPE END RESET	When "Lo" is input, TAPE END OUT is stopped.
30	I	Lo	REC START IN	When "Lo" is input, recording is started.
31	O	-	-	Not used.
32	-	-	VSS	Grounded.
33	O	-	-	Not used.
34	O	-	-	Not used.
35	O	Hi	ALARM OUT	Outputs "Hi" during alarm recording. Outputs pulses after alarm recording is ended.
36	O	Hi	TAPE END OUT	Outputs "Hi" when the tape reaches its end during recording.
37	-	-	-	Not used.
38	-	-	-	Not used.
39	-	-	-	Not used.
40	-	-	-	Not used.
41	O	Pulse	CAM SW OUT	Outputs the timing pulse to switch the recording and camera when an auto switcher is connected.
42	O	-	-	Not used.
43	I	Lo	RESET	Reset input.
44	-	-	GND	Grounded.

Pin No.	I/O	Active Level	Abbreviation	Function
45	I	Hi	REC MUTE	Timing signal input for CAM SW output.
46	I	Pulse	AC CLOCK	Power supply clock signal input. Used to count the clock and detect a power failure.
47	I	Pulse	V.SYNC	Input to detect whether the video signal is input or not.
48	-	-	5V	A5V power input.
49	-	-	X2	System clock signal in modes other than the back-up mode.
50	I	-	X1	
51	-	-	GND	Grounded.
52	-	-	XT2	Clock signal of the clock in the back-up mode.
53	I	-	XT1	
54	-	-	GND	Grounded.
55	I	Hi/Lo	LADDER 1	A/D inputs to detect that buttons on the front panel have been pressed.
56	I	Hi/Lo	LADDER 2	
57	I	Hi/Lo	LADDER 3	
58	I	Hi/Lo	LADDER 4	
59	-	-	-	Not used.
62	O	Pulse	LOAD(M-ROM)	LOAD signal between the MAIN- μ P and EEP ROM.
63	-	-	5V	5V power inputs.
64	I	-	5V	

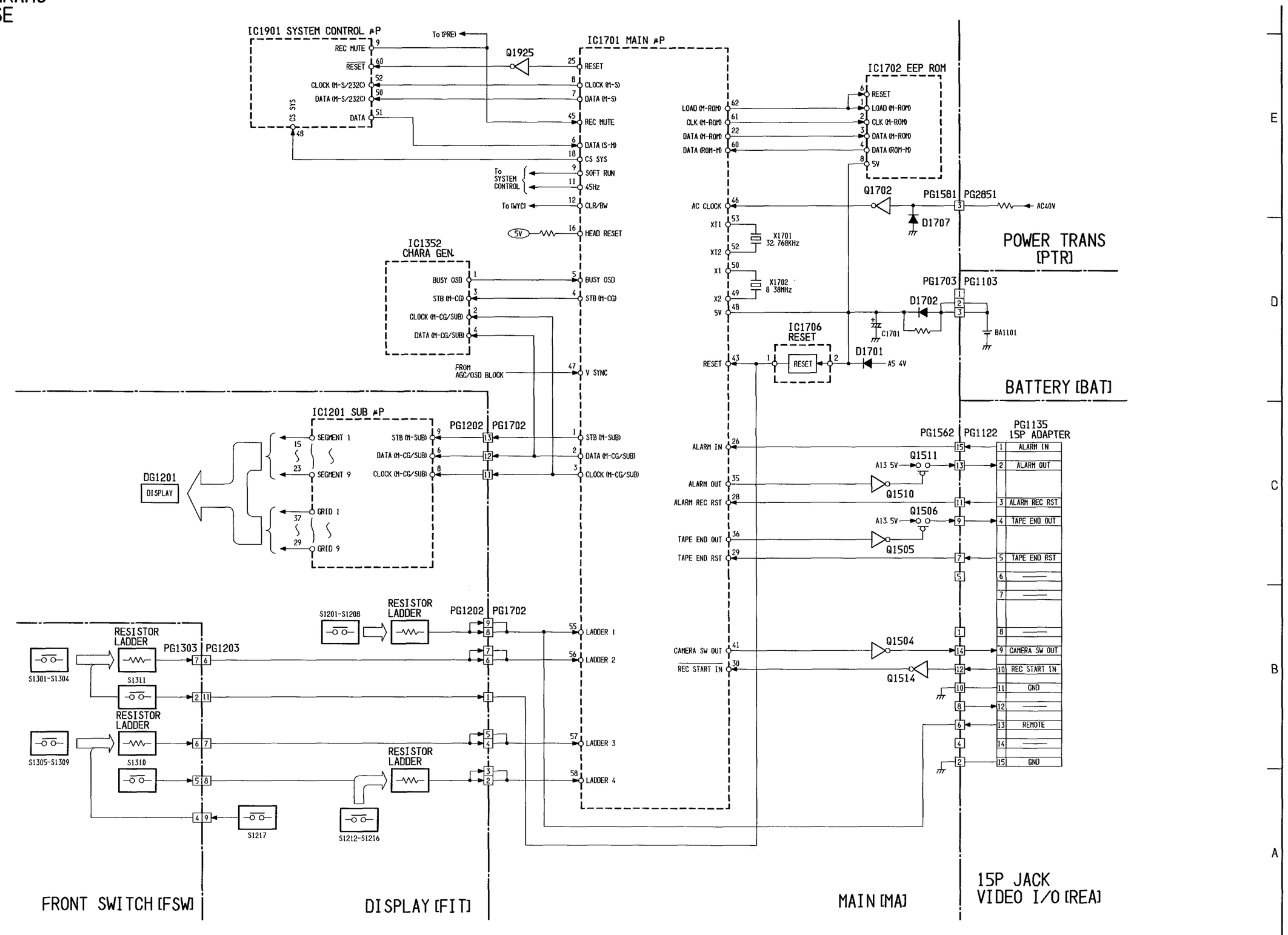
1-3. System Control μ P (IC1901) Pin Functions

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	A/D	FL/TAB	Safety tab/cassette position detection input. H: TAB SW OFF (with tab), M: TAB SW ON (without tab), L: When cassette is being inserted/ejected. When a cassette without its safety tab is inserted, recording is inhibited and the cassette is ejected automatically in the timer recording state.
2	I	-	5V	A5V power inputs.
3	I	-	5V	
4	I	-	5V	
5	I	Lo	FWD END	When a "Lo" pulse is input from the sensor in the mechanism, the current mode is released. The end sensors each detect one end of the tape. When "Lo" pulses are input from both sensors, it is detected that a cassette is not inserted.
6	I	Lo	REW END	
7	I	Pulse	S.REEL	The period of the take-up reel pulses is calculated to detect whether slack tape has been taken up or not. When slack tape is detected, the mechanism is stopped. The supply reel pulses are used together with the take-up reel pulses to calculate the tape remaining time in the rewind mode.
8	I	Pulse	T.REEL	
9	O	Hi	REC MUTE	Video signal record muting control. Prevents the signal from being supplied to the video heads.
10	O	Hi	SLOW	Controls the voltage applied to the capstan motor.
11	O	Hi	REC(AUDIO)	Sets the audio circuits to the record mode.
12	O	-	-	Not used.
13	O	Hi	REC(VIDEO)	Sets the video circuits to the record mode and controls the REC9V power supply.
14	O	Hi	PB	Sets the video/audio circuits to the playback mode.
15	-	-	-	Not used.
16	O	Hi	LINE MUTE	Audio signal record and playback muting control. Prevents the signal from being supplied to the audio head.
17	I	-	X-TEST	A5V power input.
18	-	-	-	Not used.
19	I	Pulse	CFG.DIV	CFG divided frequency signal input. Used to detect whether or not the slack tape is taken up onto the supply reel in the eject mode.
20	-	-	-	Not used.
21	I	Hi/Lo	M.STATE 1	Mechanism state detection signal inputs to control the loading motor.
22	I	Hi/Lo	M.STATE 2	
23	I	Hi/Lo	M.STATE 3	
24	I	Hi/Lo	M.STATE 4	
25	-	-	-	Not used.
26	I	Hi	DUTY	Index detection input from the main servo IC.
27	O	Hi	HD48Hr	Tape speed mode control outputs.
28	O	Hi	TRN./SER+FHS	Output to control the switching of the operation of the double azimuth heads and the head switching control output during slow play.
29	O	Hi	UNLOAD	Signals that drive the loading motor to set the mechanism to the specified mode.
30	O	Hi	LOAD	
31	O	Hi	27Hr	Tape speed mode control outputs.
32	O	Hi	09Hr	
33	-	-	GND	Grounded.
34	O	Hi	03Hr	Tape speed mode control outputs.
35	O	Lo	-	Not used.
36	O	Lo	-	
37	O	Lo	-	
38	O	Hi/Mi/Lo	CAPST.CONT	Selects the capstan motor control mode. H: Reel (voltage control) mode, M (open): Servo output control mode, L: Brake mode
39	O	Hi	fH CORRECT 1	Cylinder speed correction outputs during frame advance. For the correction of horizontal jitter.
40	O	Hi	fH CORRECT 2	
41	O	Hi	SP HS	Video head switching select output.
42	O	Hi	SKEW	Skew correction output during time-lapse recording.
43	O	Hi	CTL CONT	CTL timing output during recording.

Pin No.	I/O	Active Level	Abbreviation	Function
44	O	Hi	REVERSE	Reverse mode control output. Drives the capstan motor in reverse.
45	-	-	-	Not used.
46	I	Lo	CTL	CTL pulse input for the slow play mode. CTL pulse input for the linear time counter.
47	I	Lo	CTL DIV	
48	I	Pulse	CS SYS	Chip select signal between the MAIN- μ P and SYS.CON- μ P.
49	I	Pulse	SW25Hz	Monitors the period of the SW25Hz signal to detect an abnormality in the cylinder motor drive. Stops the cylinder motor if an abnormality is detected. This is also used as the head switching signal during playback.
50	I	Pulse	DATA(M-S)	Common communications lines between the MAIN- μ P and SYS.CON- μ P;data is communicated synchronized with the clock signal.
51	O	Pulse	DATA(S-M)	
52	I	Pulse	CLK(M-S)	
53	I	Pulse	CFG/REV.CFG	The divided CFG pulses are input during playback. The capstan rotation sensor detection signal is input during recording.
54	-	-	GND	Grounded.
55	-	-	GND	
56	-	-	-	Not used.
57	-	-	GND	Grounded.
58	I	-	X1	Inputs to generate the system clock.
59	I	-	X2	
60	I	Lo	RESET	Initializes the SYS.CON- μ P when power is supplied.
61	O	Lo	SKEW2	Skew correction output during time-lapse recording.
62	O	Pulse	CLK(S-SRV)	Data bus lines between the SYS.CON- μ P and main servo IC; data is transferred to the main servo IC synchronized with the clock signal.
63	O	Pulse	DATA(S-SRV)	
64	O	Lo	DS	CH-1/CH-2 head switching signal.
65	-	-	-	Not used.
66	O	Hi	TRICK PLAY	Trick play mode signal. The line correlative noise canceller is removed from the video circuit and the peaking frequency of the 4.6MHz peaking circuits changed to 4.2MHz.
67	O	Lo	$\overline{09Hr}$	Outputs "Lo" only during recording in the 09Hr mode.
68	-	-	-	Not used.
69	-	-	-	
70	O	Lo	POWER ON	Control signal to prevent the capstan motor from malfunctioning immediately after power is supplied.
71	-	-	-	Not used.
72	O	Hi	SLOW BRAKE	Signal to control the voltage applied to the capstan motor when slow braking is applied.
73	-	-	GND	Grounded.
74	-	-	GND	
75	-	-	GND	
76	-	-	-	Not used.
77	-	-	-	
78	I	0-5V	V.LOCK	Picture control voltage input during still play.
79	I	0-5V	SLOW TRACK	Tracking voltage input during slow play.
80	I	0-5V	09Hr TRACK	Tracking voltage input during playback.

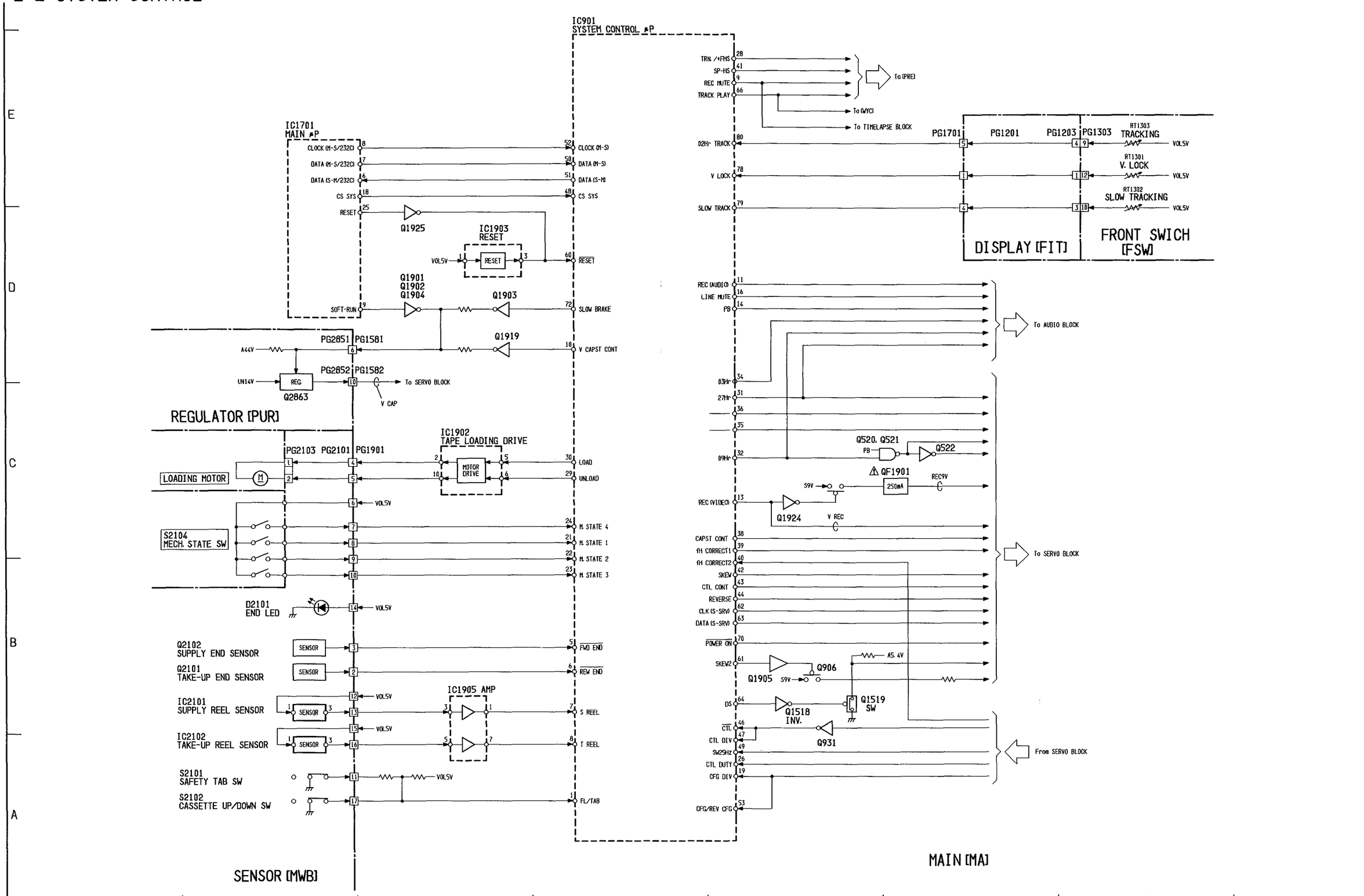
MEMO

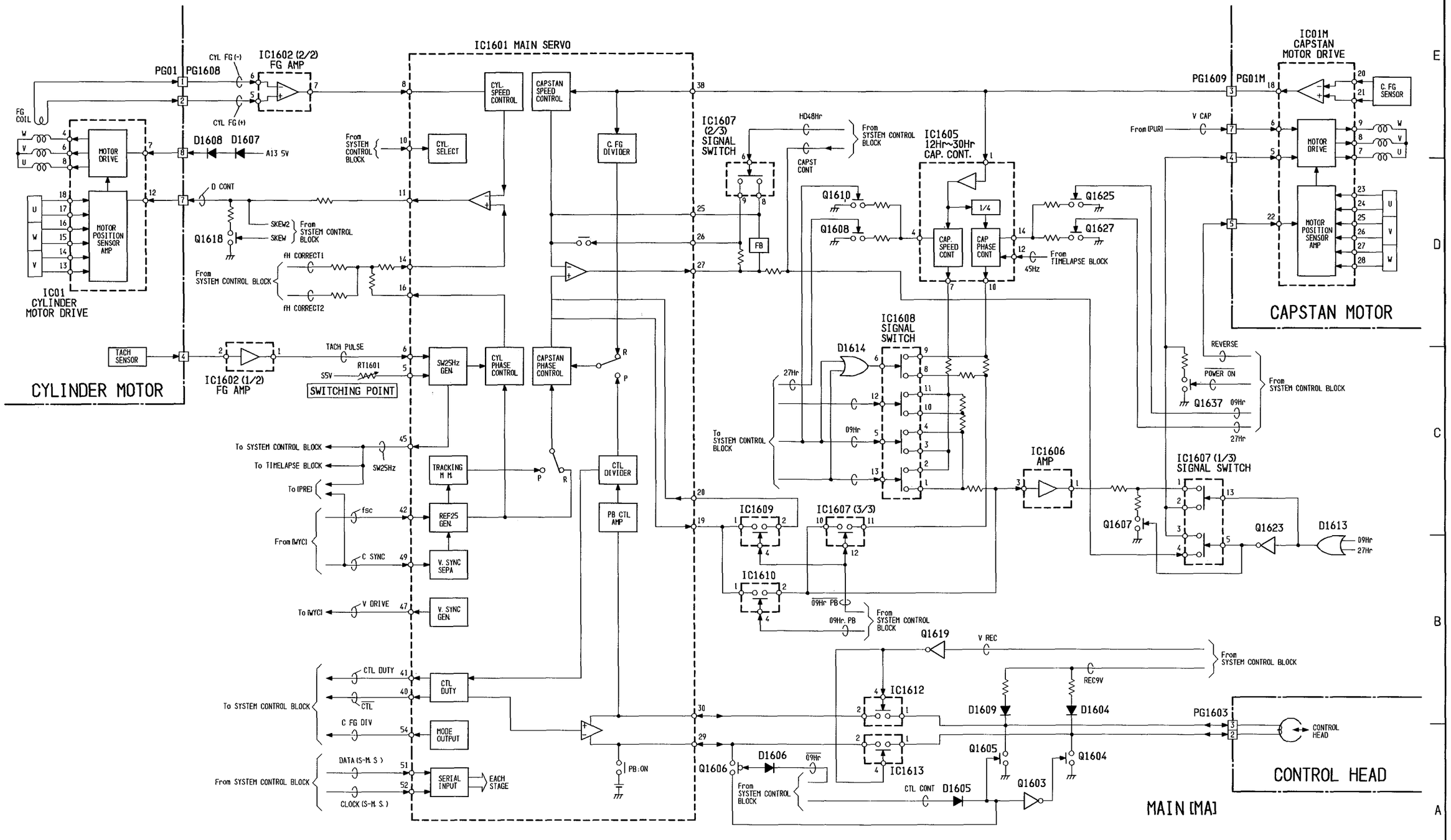
2. BLOCK DIAGRAMS
2-1. TIMELAPSE



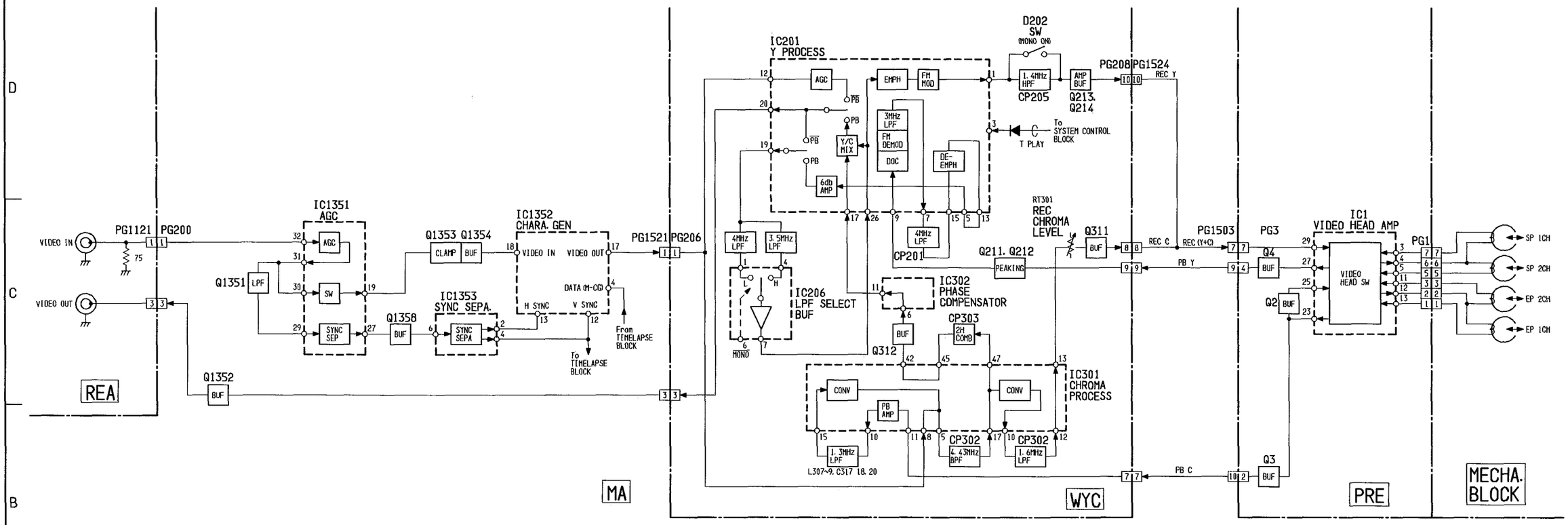
TIMELAPSE 8-7 8-8 TIMELAPSE

2-2. SYSTEM CONTROL

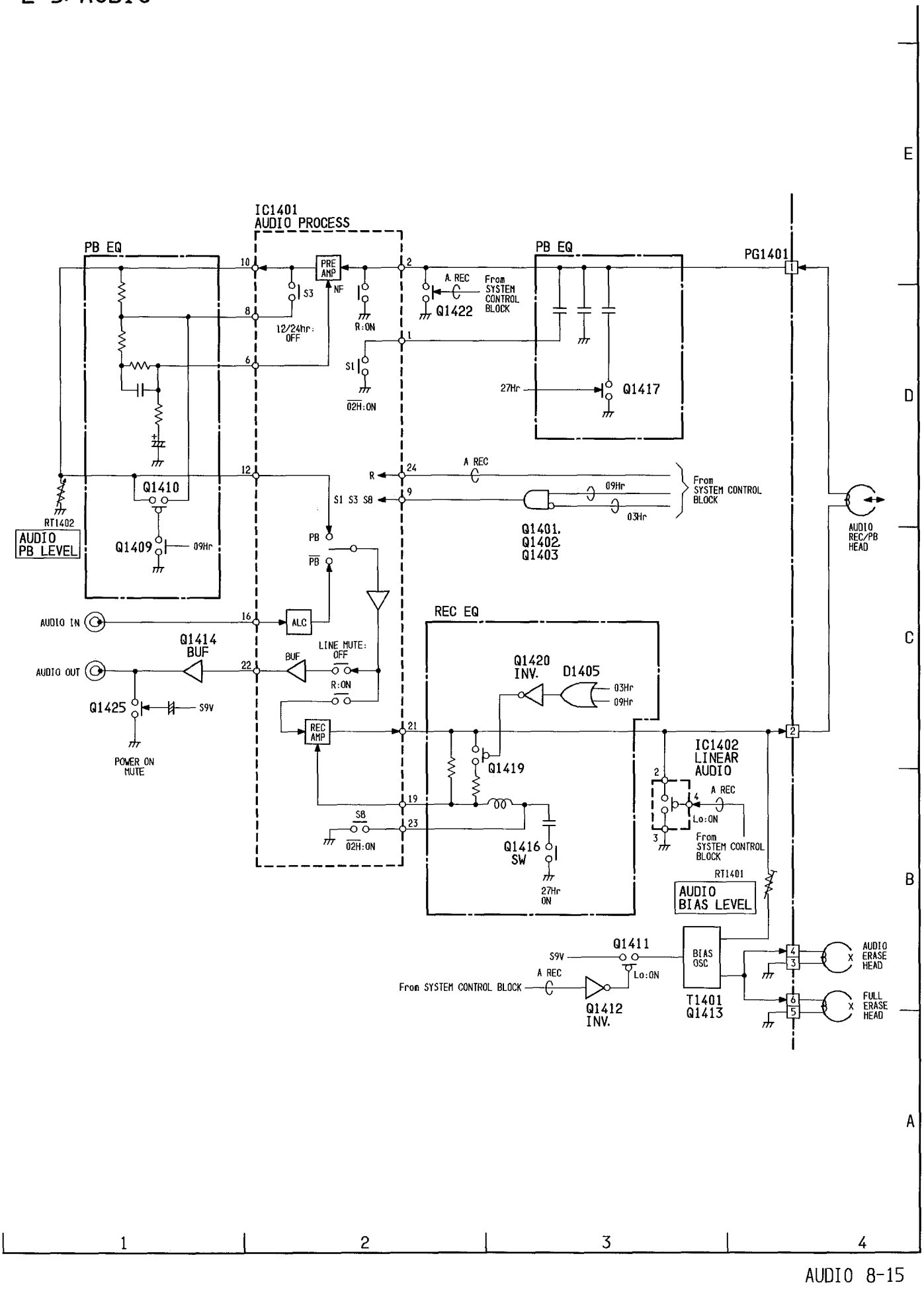



IC1601 MAIN SERVO
IC01 CYLINDER MOTOR DRIVE
CYLINDER MOTOR
IC1602 (2/2) FG AMP
IC1602 (1/2) FG AMP
MOTOR DRIVE
MOTOR POSITION SENSOR AMP
FG COIL
CYL FG (-)
CYL FG (+)
D1608 D1607
A13 5V
D CONT
SKEW2
SKEW
Q1618
From SYSTEM CONTROL BLOCK
fH CORRECT1
fH CORRECT2
TACH SENSOR
TACH PULSE
RT1601
5V
SWITCHING POINT
CYL. SPEED CONTROL
CAPSTAN SPEED CONTROL
CYL. SELECT
C.FG DIVIDER
SW25Hz GEN.
CYL PHASE CONTROL
CAPSTAN PHASE CONTROL
TRACKING M.M.
REF25 GEN.
V. SYNC SEPA
V. SYNC GEN.
CTL DUTY
MODE OUTPUT
SERIAL INPUT
EACH STAGE
CTL DIVIDER
PB CTL AMP
PB:ON
To SYSTEM CONTROL BLOCK
To TIMELAPSE BLOCK
To (PRE)
From (WYC)
To (WYC)
fsc
C SYNC
V DRIVE
SW25Hz
C FG DIV
DATA (S-M.S.)
CLOCK (S-M.S.)
IC1607 (2/3) SIGNAL SWITCH
HD48Hr
CAPST CONT
FB
IC1605 12Hr~30Hr CAP. CONT.
CAP. SPEED CONT
CAP PHASE CONT
1/4
Q1610
Q1608
Q1625
Q1627
45Hz
From TIMELAPSE BLOCK
IC1608 SIGNAL SWITCH
D1614
27Hr
09Hr
IC1609
IC1607 (3/3)
IC1610
09Hr PB
IC1606 AMP
IC1607 (1/3) SIGNAL SWITCH
Q1607
Q1623
D1613
IC01M CAPSTAN MOTOR DRIVE
C.FG SENSOR
V CAP
From (PUR)
CAPSTAN MOTOR
REVERSE
POWER ON
Q1637
Q1619
V REC
REC9V
IC1612
IC1613
D1609
D1604
D1606
Q1606
Q1605
Q1604
Q1603
CTL CONT
D1605
PG1603
CONTROL HEAD
MAIN [MA]

2-4. Y/CHROMA


REA
VIDEO IN
VIDEO OUT
PG1121
PG200
75
IC1351
AGC
AGC
SW
SYNC SEP
Q1351
LPF
Q1352
BUF
Q1353 Q1354
CLAMP
BUF
Q1358
BUF
IC1353
SYNC SEPA.
SYNC SEPA
IC1352
CHARA. GEN
VIDEO IN
VIDEO OUT
DATA (M-CG)
H SYNC
V SYNC
To TIMELAPSE BLOCK
From TIMELAPSE BLOCK
PG1521
PG206
MA
IC201
Y PROCESS
AGC
EMPH
FM MOD
1.4MHz HPF
CP205
AMP BUF
Q213. Q214
PG208
PG1524
REC Y
D202
SW
(MONO ON)
To SYSTEM CONTROL BLOCK
T PLAY
3MHz LPF
FM DEMOD
DOC
DE-EMPH
Y/C MIX
6db AMP
4MHz LPF
3.5MHz LPF
4MHz LPF
CP201
IC206
LPF SELECT BUF
MONO
IC302
PHASE COMPENSATOR
BUF
Q312
CP303
2H COMB
CONV
PB AMP
CONV
IC301
CHROMA PROCESS
1.3MHz LPF
L307~9. C317 18. 20
CP302
4.43MHz BPF
CP302
1.6MHz LPF
WYC
RT301
REC CHROMA LEVEL
Q311
BUF
Q211. Q212
PEAKING
REC C
REC (Y+C)
PB Y
PB C
PG1503
PG3
Q4
BUF
Q2
BUF
Q3
BUF
IC1
VIDEO HEAD AMP
VIDEO HEAD SW
PG1
SP 1CH
SP 2CH
EP 2CH
EP 1CH
PRE
MECHA. BLOCK

2-5. AUDIO


IC1401
AUDIO PROCESS
PB EQ
PRE AMP
NF
S3
12/24Hr: OFF
R:ON
S1
02H:ON
A REC
From SYSTEM CONTROL BLOCK
Q1422
PB EQ
PG1401
27Hr
Q1417
A REC
From SYSTEM CONTROL BLOCK
09Hr
03Hr
Q1401, Q1402, Q1403
AUDIO REC/PB HEAD
Q1410
Q1409
09Hr
RT1402
AUDIO PB LEVEL
PB
PB
AUDIO IN
ALC
Q1414 BUF
AUDIO OUT
BUF
LINE MUTE: OFF
R:ON
Q1425
S9V
POWER ON MUTE
REC EQ
Q1420 INV.
D1405
03Hr
09Hr
REC AMP
Q1419
IC1402 LINEAR AUDIO
A REC
Lo:ON
From SYSTEM CONTROL BLOCK
S8
02H:ON
Q1416 SW
27Hr ON
RT1401
AUDIO BIAS LEVEL
Q1411
S9V
A REC
Lo:ON
From SYSTEM CONTROL BLOCK
Q1412 INV.
BIAS OSC
T1401
Q1413
AUDIO ERASE HEAD
FULL ERASE HEAD

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